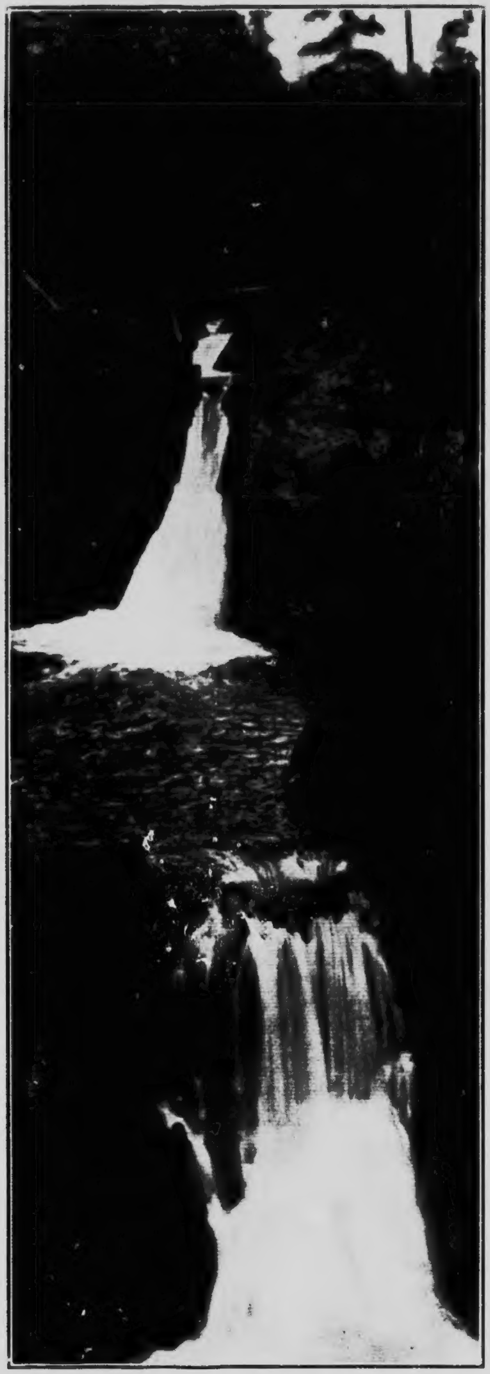


Falls at low water on Little Qualicum River
about three miles below Cameron lake.

DOMINION WATER POWER BRANCH
DEPARTMENT OF THE INTERIOR
OTTAWA, CANADA.

R33-14

WATER RESOURCES PAPER No. 14

REPORT

OF THE

BRITISH COLUMBIA HYDROGRAPHIC SURVEY

FOR

THE CALENDAR YEAR 1914

BY

R. G. SWAN, B.A. Sc.
Chief Engineer
Prepared under the direction of the Superintendent of Water Powers.

OTTAWA
PRINTED BY J. DE L. TACHÉ, PRINTER TO THE KING'S MOST
EXCELLENT MAJESTY
1915

25E—1915] 1½

00938221

To Field Marshal His Royal Highness Prince Arthur William Patrick Albert, Duke of Connaught and of Strathearn, K.G., K.T., K.P., etc., etc., etc., Governor General and Commander in Chief of the Dominion of Canada.

MAY IT PLEASE YOUR ROYAL HIGHNESS:

The undersigned has the honour to lay before Your Royal Highness the British Columbia Hydrographic Survey Report for 1914.

Respectfully submitted,

W. J. ROCHE,
Minister of the Interior.

OTTAWA, May 1, 1915.

DEPARTMENT OF THE INTERIOR,

OTTAWA, May 1, 1915.

The Honourable W. J. ROCHE, M.D.
Minister of the Interior.

SIR,—I have the honour to submit the British Columbia Hydrographic Survey Report for 1914, and to recommend that it be published as Water Resources Paper No. 14 of the Dominion Water Power Branch.

I have the honour to be, sir,
Your obedient servant,

W. W. CORY,
Deputy Minister of the Interior.

DEPARTMENT OF THE INTERIOR, WATER POWER BRANCH,
OTTAWA, May 1, 1915.

W. W. CORY, Esq., C.M.G.,
Deputy Minister of the Interior,

SIR,—I have the honour to submit the attached report by R. G. Swan, B. A.Sc., Chief Engineer of the British Columbia Hydrographic Survey.

In view of its important bearing on the industrial development of southern British Columbia, I would recommend that it be published as Water Resources Paper No. 14 of the Dominion Water Power Branch.

Respectfully submitted,

J. B. CHALLIES,
Superintendent, Dominion Water Power Branch.

Ottawa, May 1, 1915.

J. B. Challies, Esq.,
Superintendent,
Dominion Water Power Branch,
Department of the Interior,
Ottawa.

Sir,—I have the honour to transmit herewith my Annual Report of the British Columbia Hydrographic Survey for the calendar year 1914, together with the reports of engineers in charge of divisions.

Your obedient servant,

R. G. Swan,
Chief Engineer.

TABLE OF CONTENTS.

I.

PAGE.

Report of the Chief Engineer 3
  Scope of Work 3
  Organization 3
    Coast Division—
      List of Regular Gauging Stations 4
      Miscellaneous Meterings 5
    Kamloops Division 6
      List of Regular Gauging Stations 6
      Miscellaneous Meterings 8
    Nelson Division—
      List of Regular Gauging Stations 9
      Miscellaneous Meterings 11
  Explanation of Tables 11
  Definition of Terms 12
  Convenient Equivalents 12
  Accuracy and Reliability of Data 13
  Methods of Measuring stream flow 13
  Co-operation and Acknowledgements 13

II.

COAST DIVISION.

Report of Division Engineer 17
  Territory 17
  Uses of Water 17
  Present Water-power Developments 17
  Possible Water-power Developments 17
  Municipal Water Supply 17
  Reclamation 17
  Irrigation 17
  Location of Stations 18
  Precipitation and Temperature 18
  Comparison of Stream Measurements 18
  Districts 18
    Southern District 19
    Lillooet District 20
    Vancouver Island District 21
  Water-power Developments 24
  Possible Water-power Developments 24
  Irrigation Streams 25
  Municipal Water Supply 25
  Reclamation and Drainage 26
  Southern District 26
    Total Monthly Precipitation, 1914 26
    Mean Monthly Temperature, 1914 26
    Difference from average Precipitation, 1914 27
    Difference from average Temperature, 1914 27
    Comparison of Monthly Discharges, 1914 27
  Lillooet District—
    Total Monthly Precipitation 1914 28
    Mean Monthly Temperature 1914 28
  Vancouver Island District—
    Total Monthly Precipitation, 1914 28
    Mean Monthly Temperature, 1914 28
    Difference from Average Precipitation, 1914 29
    Difference from average Temperature, 1914 29

III

KAMLOOPS DIVISION.

PAGE.

- Report of Division Engineer 33
  - Territory 33
  - Uses of Water 33
    - Irrigation 33
    - Water-power Development 33
    - Water-power Possibilities 33
    - Municipal Supply 34
  - Topography of Kamloops Division 34
  - Precipitation and Climate 34
  - District and Staff 35
    - Kamloops District 35
    - Ashcroft and Nicola District 36
    - Okanagan District 36
    - Kamloops Office 36
    - Inspections 36
  - Developed Water Powers 38
    - Barrière River 38
    - Boundary Creek 39
    - Crazy Creek 39
    - Fortune or Davis Creek 39
    - Kettle River at Cascade 39
    - Kettle River at North Forks 39
    - Murray Creek 40
    - Nakalliston Creek 40
    - Similkameen Creek 40
  - Total Monthly Precipitation, 1914 40
  - Mean Monthly Temperature, 1914 40
  - Difference from Average Precipitation, 1914 41
  - Difference from Average Temperature, 1914 41

IV.

NELSON DIVISION.

- Report of Division Engineer 45
  - General Remarks 45
  - Nelson Division 45
  - Climatic Conditions 45
    - Precipitation 47
    - Chinook Winds 47
    - Snowfall Data along the C.P.R. and Selkirk Range 47
    - Temperature 48
    - Snowfall Table 48
  - Co-operation 48
  - Hydrographic Districts 48
  - Problem of Transportation 49
  - Winter Measurements 50
  - Total Monthly Precipitation 1914 51
  - Mean Monthly Temperature 1914 52
  - Difference from Average Precipitation 1914 52
  - Difference from Average Temperature 1914 52

HYDROGRAPHIC DATA—COAST DIVISION.

- Southern District 55
  - Belknap Creek 55
  - Boulder Creek 61
  - Brandt Creek 64
  - Capilano Creek 69
  - Chehalis River 72
  - Chilliwack River 75

HYDROGRAPHIC DATA—COAST DIVISION—*Concluded.*

	PAGE.
Coquihalla River	
Fraser River	78
Hixon Creek	81
Jones Creek	84
Lynn Creek	88
Mesliloet River	91
Nicolum River	94
Norton Creek	97
Seymour Creek	99
Silver-Pitt Creek	102
Slollicum River	105
South Lillooet River	108
Sumallo River	108
Young Creek	111
Vancouver Island District—	115
Big Qualicum River	
Campbell River	117
Chemainus River	120
Cowichan River	123
Englishman River	126
Haslam Creek	129
Koksilah River	131
Little Qualicum River	134
Nanaimo River	137
Oyster River	140
Puntledge River	143
Shawnigan Creek	146
Sproat River	152
Stamp River	155
Tsolum River	159
Lillooet District—	165
Bridge River	
Cayuse Creek	168
Cheakamus River	171
Fountain Creek	174
Green River	177
Laluwissin Creek	179
Lillooet River	185
Riley Creek	187
Seton Creek	190
Six Mile Creek	192
Soo River	197
Texas Creek	200
Miscellaneous Meterings —	201
	204

HYDROGRAPHIC DATA—KAMLOOPS DIVISION.

Kamloops District—	
Bolean Creek	
Campbell Creek	207
Canyon Creek	210
Clearwater River	213
Little Clearwater River	216
Cherry Creek	220
Essell Creek,	223
Guichon Creek	226
Heffley Creek (Below Heffley Lake)	229
Heffley Creek (Lower)	232
Ingram Creek	235
Jamieson Creek	238
Louis Creek	241
Monte Creek (Div. to Summit Lake)	244
Monte Creek (Below Div. to Summit Lake)	247
Monte Creek (Above Bostock Diversion)	250
Myrtle River	253
Paul Creek (Below Paul Lake)	256
Raft River	258
Siwash Creek	260
Thompson River (Kamloops)	263
Tranquille River	264
	267

HYDROGRAPHIC DATA—KAMLOOPS DIVISION—*Concluded.*

PAGE.

Okanagan District—

Adams River.......... 270
Ashnola Creek.......... 275
Boundary Creek.......... 278
Celeste Creek.......... 281
Crazy Creek.......... 284
Eagle River.......... 287
Granite Creek.......... 290
Kettle River (North Fork).......... 292
Kettle River (W. Fork).......... 295
Kettle River (Nicholsons Bdg.).......... 298
Kettle River (Carson).......... 301
Niskonlith Creek.......... 306
Okanagan River.......... 308
Similkameen River.......... 311
Shuswap River.......... 314
South Similkameen River.......... 316
Tulameen River.......... 320
Thompson River (Chase).......... 324

Ashcroft District—

Barnes Creek.......... 327
Bonaparte River.......... 330
Criss Creek.......... 333
Coldwater River.......... 336
Deadman River.......... 339
Fraser River (Lytton).......... 342
Hat Creek (Above Hammonds Div.).......... 344
Nahatlatch River (Upper).......... 347
Nahatlatch River (Lower).......... 350
Nicola River (Merritt).......... 352
Nicola River (Mouth).......... 355
Spius Creek.......... 358
Thompson River (Spences Bdg.).......... 361
Miscellaneous Meterings— 363

HYDROGRAPHIC DATA—NELSON DIVISION.

Nelson District—

Cariboo Creek.......... 367
Carpenter Creek.......... 368
Columbia River (Castlegar).......... 373
Columbia River (Revelstoke).......... 377
Four Mile Creek (Below Mill).......... 380
Four Mile Creek (Above Intake).......... 383
Goat River.......... 386
Kaslo Creek.......... 389
Kooskanax Creek.......... 391
Kootenay River.......... 395
Nakusp Creek.......... 419
Pend d'Oreille River.......... 422
Sawmill Creek.......... 425
Slocan River.......... 427

Revelstoke District—

Akolkolex River.......... 431
Beaver River.......... 434
Blaeberry River.......... 437
Bugaboo Creek.......... 440
Canyon Creek.......... 442
Columbia River (Golden).......... 443
Columbia River (Trail).......... 446
Dutch Creek.......... 449
Field Springs (No. 1).......... 450
Field Springs (No. 2).......... 450
Field Springs (No. 3).......... 450
Findlay Creek.......... 454
Horsethief Creek.......... 457
Hospital Creek (Weir).......... 458

HYDROGRAPHIC DATA—NELSON DIVISION—*Continued.*

PAGE.

Illecillewaet River (Glacier) 460
Illecillewaet River (Revelstoke) 462
Incomappleux River 466
Kicking Horse River (Golden) 468
Kicking Horse River (Field) 472
Kicking Horse River (No. 2 Tunnel) 474
No. 2 Creek 478
Sinclair Creek 481
Spillimacheen River 482
Toby Creek 486
N. Vermilion Creek 488
S. Vermilion Creek 490
Windermere Creek 492

Cranbrook District—

Bull River 494
Cherry Creek 497
Elk River 503
Gold Creek 506
Kootenay River 508
Linklater Creek 512
Mark Creek 513
Mud Creek 516
Phillips Creek 518
Rock Creek 521
Big Sand Creek 523
Little Sand Creek 524
St. Marys River 526

Miscellaneous Meterings 530

Index 531

ILLUSTRATIONS.

PAGE.
Falls at low water on Little Qualicum river about three miles below Cameron lake. . Frontispiece.
Impounding dam of Puntledge river hydro-electric installation on the Puntledge river near outlet from Comox lake.......... 22
Diversion dam showing flume to intake of Puntledge river hydro-electric installation on Puntledge river, about two miles below impounding dam.......... 23
Dam, Barriere River Development, City of Kamloops.......... 37
Exterior, Barriere Hydro-Electric Power House, Municipal Plant for City of Kamloops, B.C.......... 37
Interior, Barriere River Hydro-Electric Power House, Municipal plant for City of Kamloops, B.C.......... 38
Interior, Sub-station, City of Kamloops, B.C.......... 38
Cranbrook District (II). Photograph showing support for cable way and platform attachment for cable car.......... 49
Cranbrook District (III). Photograph showing cable car and method of operating.......... 50
Installing metal faced gauge at metering section on Sumallo river, one mile from mouth 111
Installing metal faced gauge at metering section on Oyster river, Vancouver Island.......... 144
Wooden staff gauge at Sproat lake near outlet attached to rock filled crib.......... 156
Metering section on Sproat river near outlet from Sproat lake.......... 157
Confluence of Myrtle and Clearwater rivers.......... 216
Myrtle river, Dawson Falls.......... 256
Helmcken Falls and Myrtle river canyon.......... 257
Adams lake.......... 270
Adams river, automatic stage house.......... 271
Adams river, automatic water stage register.......... 272
Nelson District (1) Highway Bridge on Columbia River near Trail, showing metering section on upstream side of bridge.......... 446
Cranbrook District (V)—Bull river looking up from metering section.......... 495
Cranbrook District (I)—Photograph showing Elk river cable station above canyon.......... 503

MAP.

Southern British Columbia, showing gauging stations.......... Inside back cover.

REPORT

OF THE

BRITISH COLUMBIA HYDROGRAPHIC SURVEY FOR 1914

CHAPTER I

REPORT OF R. G. SWAN, B.A.Sc.

Chief Engineer.

CHAPTER I.

REPORT OF THE CHIEF ENGINEER.

SCOPE OF WORK.

The study of water supply may be said to be carried on for three purposes, viz.: Irrigation, Domestic and Municipal Water Supply, and Water-power development. The agricultural development of the semi-arid sections of the province is dependent on the amount of water available. The rapid settlement of the province, due to new railroad lines, demands a close study of both the quality and quantity of the water supply, for the progress of any industrial centre is practically dependent on the cost of power available for its manufactures and benefits and conveniences for its residents. The variation in the run-off from year to year necessitates a close study of stream flow for a number of years before any estimate can be made of the annual discharge of any stream. In connection with many undertakings, costly mistakes have been made owing to the fact that a careful study of the stream flow was not made before commencing construction operations.

The hydrographic work in British Columbia covers fairly well the southern half of the province, the stations being established on the rivers which are considered of the most importance, and of which the flow is likely to be utilized in the near future.

In the Railway Belt we have co-operated with the Dominion Lands Branch, reporting on all engineering works in connection with irrigation and drainage projects, foreshore applications for leases in connection with quarrying, the removal of sand and gravel, marine docks, and elevators. Numerous surveys have also been made for the setting aside of Dominion lands for the protection of municipal water supply.

The Conservation Commission of Canada has been furnished with all the hydrographic data required in its forthcoming report on British Columbia water-powers. The furnishing of this data has involved a very considerable amount of extra work, not only in having additional copies of the data made available in the form desired by the Commission, but also in having the various field officers of the survey carry on work incident to the particular requirements of the Commission.

The co-operation between the Provincial Water Rights Branch and this Survey has been extensive and of mutual value. The provincial engineers have rendered every reasonable assistance to the engineers of this survey. Many valuable suggestions as to organization and scope of work have been received from the Comptroller of Water Rights, Mr. William Young, and have been incorporated in our work.

No small amount of time has been given by the chief engineer and the various divisional engineers to free consultation in connection with hydrographic questions that have arisen throughout the province. It is felt that this work, requiring as it does the exercise of much patience and tact, has given permanent satisfaction to the interested portion of the public.

ORGANIZATION.

DIVISION OF WORK.

Mention was made in my report for 1913 of the establishment of divisional officers with a view to facilitating the work as much as possible. The section of the province covered by the survey in 1914 was divided into three divisions, namely, Coast, Kamloops, and Nelson. In establishing divisional officers at Vancouver, Kamloops, and Nelson, the most central points were chosen for the successful working of each division. A glance at the accompanying map will give a better idea than can be given in a general description of the areas covered by each division. In the past the most expensive feature of field work in British Columbia has been that of transportation. In an endeavour to overcome this, each division was again divided into three districts, the work in the districts being in charge of district hydrographers who remain in the field for practically the entire season, thus economizing in time and transportation expenditures.

COAST DIVISION.

C. G. Cline, Division Engineer.

The three districts comprising the Coast division are the Southern, the Vancouver Island, and the Lillooet. A general description of each district will be found on pages 19 to 23 of the division engineer's report.

The Southern district has been in charge of C. G. Cline, B.A.Sc.

The Vancouver Island district has been in charge of C. E. Webb, B.A.Sc.

The Lillooet district has been in charge of H. C. Hughes, B.Sc.

Practically all the stations in the Southern district were established under the organization of the Railway Belt Hydrographic Survey, and are consequently fairly well rated. For this reason, Mr. Cline has had sufficient time to generally supervise the work of the other two districts.

Owing to the fact that the Vancouver Island and Lillooet districts comprise new territory, a great deal of work in the establishment of gauging stations has been necessitated. To relieve this pressing work, Mr. Cotton has assisted Mr. Webb and Mr. Hughes until the latter part of August. By this time the work was well established, and Mr. Cotton having volunteered for active service it was not necessary to fill the vacancy so caused.

The computations for the stations of each district have been made by the engineer in charge of the field work of that district and checked by the division engineer.

COAST DIVISION.—List of Regular Gauging Stations.

SOUTHERN DISTRICT.

Station Number.	Name.	Location.	
1000	Belknap creek	Tp. 6, R. 7, W. 7 M.	Prov. Water Dist. 1.
*1060	Black creek	Near Howe sound	" "
1063	Belknap creek	Tp. 7, R. 7, W. 7 M	" "
1001	Boulder creek	Tp. 3, R. 27, W. 6 M	" "
1002	Brandt creek	Tp. 7, R. 7, W. 7 M	" "
1021	Brandt creek	Tp. 7, R. 7, W. 7 M	" "
1023	Capilano creek	Near North Vancouver	" "
1003	Chehalis river	Tp. 4, R. 30, W. 6 M	" "
1004	Chilliwack river	Tp. 23, E. C. M.	" "
1005	Coquihalla river	Tp. 5, R. 26, W. 6 M	" "
1007	Fraser river	Tp. 5, R. 26, W. 6 M	" "
1009	Hixon creek	Tp. 6, R. 7, W. 7 M	" "
1064	Hixon creek	Tp. 6, R. 7, W. 7 M	" "
1010	Jones creek	Tp. 3, R. 27, W. 6 M	" "
1046	Lynn creek	Near North Vancouver	" "
1011	Mesliloet river	Tp. 7, R. 7, W. 7 M	" "
1058	Nicolum river	Tp. 4, R. 5, W. 6 M	" "
1013	Norton creek	Tp. 7, R. 7, W. 7 M.	" "
1022	Seymour creek	Near North Vancouver	" "
1017	Silver-Pitt creek	Tp. 4, R. 5, W. 7 M	" "
1033	Slollicum river	Tp. 5, R. 28, W. 6 M	" "
1018	South Lillooet river	Tp. 12, E. C. M	" "
*1065	Skagit river	4 miles from international boundy.	" "
1056	Sumallo river	Near Railway Belt boundary	" "
1057	Sumallo river	Tp. 3, R. 24, W. 6 M	" "
1020	Young creek	Tp. 7, R. 7, W. 7 M	" "

Note.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

COAST DIVISION.—List of Regular Gauging Stations.

VANCOUVER ISLAND DISTRICT.

Station Number.	Name	Location	
1032	Big Qualicum river	One and one-half miles from mouth.	Prov. Water Dist. 1.
1042	Campbell river	At Campbell lake	" "
1027	Chemainus river	One mile from mouth near Chemainus	" "
1054	Cowichan river	At Cowichan lake	" "
1030	Englishman river	One and one-half miles from mouth, near Parksville	" "
1029	Haslam creek	Two miles from mouth, near Ladysmith	" "
1026	Koksilah river	Two miles from mouth.	" "
1031	Little Qualicum river	At Cameron lake	" "
1028	Nanaimo river	Six miles from mouth	" "
1040	Oyster river	One mile from mouth	" "
1036	Puntledge river	One mile from mouth, near Courtenay	"
1063	Puntledge river	Diversion dam above Canadian Collieries power plant	" "
1025	Shawnigan creek	At Shawnigan lake, Koenigs	" "
1051	Sproat river	At Sproat lake	" "
1052	Stamp river	At Great Central lake	" "
*1053	Stamp river	One-half mile above Stamp falls,	" "
1039	Tsolum river	Three miles from mouth, near Courtenay	" "

NOTE.—Stations marked with an asterisk (*) have been only recently established and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded and run-off data will be ret ned in the report for 1915.

COAST DIVISION.—List of Regular Gauging Stations.

LILLOOET DISTRICT.

Station Number	Stream.	Location	
1045	Bridge river	Thirty miles from mouth	Prov. Water Dist. 1.
1048	Cayuse creek	Above Seton creek	" "
1034	Cheakamus river	One mile above mouth	" "
1047	Fountain creek	Above irrigation ditches	" "
1035	Green river	Above Nairn falls	" "
1041	Green river	Below Green lake	" "
1050	Laluwissin creek	Above irrigation ditches	" "
1038	Lillooet river	Six miles above Lillooet	" "
1043	Riley creek	Above irrigation ditches	" "
1049	Seton creek	Below Seton lake	" "
1061	Six Mile creek	Near Mouth	" "
1037	Soo river	One mile from mouth	" "
1044	Texas creek	One mile from mouth	" "

COAST DIVISION.—List of Miscellaneous Gauging Stations.

SOUTHERN DISTRICT.

Name	Location	
Trout—East	Hastings townsite	
Trout—West	Hastings townsite	Prov. Water Dist. 1.
Windermere	Bidwell bay, Burrard inlet	" "
Capilano	Intake from Capilano creek	" "

VANCOUVER ISLAND.

Ash	Mouth	" "
Sooke	Sooke inlet	" "

KAMLOOPS DIVISION.

E. M. Dann, Divisional Engineer.

The three districts comprising the Kamloops division are the Kamloops, the Okanagan, and the Ashcroft. A general description of each district will be found on pages 35 and 36 of the division engineer's report.

Kamloops district has been in charge of E. H. Tredcroft, C.E.

Okanagan district has been in charge of K. G. Chisholm, B.Sc.

Ashcroft district has been in charge of C. B. Corbould, B.A.Sc.

The transportation facilities in this division are much better than in the Coast and Nelson divisions, and Mr. Dann has availed himself of these facilities to assist and supervise the establishment of new stations in the extension of this work.

The computations for the stations of each district have been made by the engineer in charge of the field work of that district, and checked by the division engineer.

KAMLOOPS DIVISION.—List of Regular Gauging Stations.

KAMLOOPS DISTRICT.

Station Number.	Name.	Location.	
2002	Bolean creek	Tp. 18, R. 12, W. 6 M	Prov. Water Dist. 2.
*2068	Boulder creek	Near Chu Chua	" "
2004	Campbell creek	Tp. 19, R. 16, W. 6 M	" "
2057	Canyon creek	Tp. 21, R. 15, W. 6 M	" "
2047	Clearwater river	Near Raft river	" "
2056	Little Clearwater river	Near Raft river	" "
2005	Cherry creek	Tp. 19, R. 19, W. 6 M	" "
2011	Essell creek	Tp. 17, R. 14, W. 6 M	" "
*2067	Fishtrap creek	Near Barriere	" "
2014	Guichon creek	Near Mamit lake	" " 3
2019	Heffley creek, (below Heffley lake)	Tp. 22, R. 16, W. 6 M	" " 2
2018	Heffley creek (Lower)	Tp. 22, R. 17, W. 6 M	" "
2020	Ingram creek	Tp. 17, R. 13, W. 6 M	" "
2022	Jamieson creek	Tp. 22, R. 17, W. 6 M	" "
2023	Louis creek	Tp. 23, R. 15, W. 6 M	" "
2026	Monte creek (Division to Summit lake)	Tp. 18, R. 14, W. 6 M	" "
2025	Monte creek (below Division to Summit lake)	Tp. 13, R. 14, W. 6 M	" "
2024	Monte creek (above Bostock diversion)	Tp. 19, R. 15, W. 6 M	" "
*2069	Myrtle river	Near Raft river	" "
2032	Paul creek (below Paul lake)	Tp. 20, R. 16, W. 6 M	" "
2055	Raft river	Near Raft river	" "
2058	Swash creek	Tp. 22, R. 16, W. 6 M	" "
2040	Thompson river (Kamloops)	Tp. 20, R. 17, W. 6 M	" "
**2041	N. Thompson river (above Jamieson creek)	Tp. 22, R. 17, W. 6 M	" "
**2059	N. Thompson river (above Clearwater river)	Near C.N.R. Mile 71 north of Kamloops	" "
2043	Tranquille river	Tp. 20, R. 19, W. 6 M	" "
*2066	Whitewood river	Near Barriere	" "

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

**Owing to certain discrepancies between the results found on the two North Thompson river stations, the data for 1914 on both these stations is withheld until the difficulties can be adjusted in the open season.

KAMLOOPS DIVISION.—List of Regular Gauging Stations—*Con.*

OKANAGAN DISTRICT.

Station Number.	Name.	Location.
2000	Adams river	Tp. 23, R. 12, W. 6 M. Prov. Water Dist. 2.
2065	Ashnola creek	Near Ashnola " " 4.
2048	Boundary creek	At Greenwood " " 5
2050	Celeste creek	Near Albas " " 2
2051	Crazy creek	Tp. 23, R. 5, W. 6 M " " 2.
2010	Eagle river	Tp. 23, R. 6, W. 6 M " " 2.
2064	Granite creek	Near Coalmont " " 4.
2052	Kettle river (N. Fork)	At Grand Forks " " 5.
2045	Kettle river (W. Fork)	Near Westbridge " " 5.
2046	Kettle river (Nicholsons Bridge)	Near Kettle Valley " " 5.
2049	Kettle river (Carson)	At Carson " " 5.
2031	Niskonlith creek	Tp. 21, R. 13, W. 6 M. " " 2.
2053	Okanagan river	Near Fairview " " 4.
*2061	Seymour river	Near Seymour Arm " " 2.
2054	Similkameen river	Near Ashnola " " 4
2034	Shuswap river	Tp 18, R. 9, W. 6 M " " 2.
2063	South Similkameen river	At Princeton " " 4.
2018	Tulameen river	At Coalmont " " 5.
2042	Thompson river (Chase)	Tp. 21, R. 13, W. 6 M. " " 2.

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

KAMLOOPS DIVISION.—List of Regular Gauging Stations.

ASHCROFT DISTRICT.

Station Number.	Name.	Location
2001	Barnes creek	Tp. 20, R. 24, W 6 M Prov. Water Dist. 2.
2003	Bonaparte river	Tp. 21, R. 24, W. 6 M " " 2.
2007	Criss creek	Tp. 22, R 22, W. 6 M " " 2.
2006	Coldwater river	At Merritt " " 3
2008	Deadman river	Tp. 22, R. 22, W 6 M " " 2
2012	Fraser river (Lytton)	Tp. 15, R. 27, W 6 M " " 1.
2016	Hat creek (above Hammond's diversion)	Tp 19 R 26, W. 6 M " " 2.
2028	Nahatlatch river (Upper)	Tp. 12, R. 27, W. 6 M " " 1
2027	Nahatlatch river (Lower)	Tp. 12, R. 27, W. 6 M " " 1
2029	Nicola river (Merritt)	At Merritt " " 3.
2030	Nicola river (Mouth)	Tp. 17, R. 25, W. 6 M " " 3.
2037	Spius creek	Tp. 13, R. 23, W. 6 M. " " 3
2039	Thompson river (Spences Bridge)	Tp. 17, R. 25, W. 6 M " " 3.

KAMLOOPS DIVISION.—List of Miscellaneous Gauging Stations.

KAMLOOPS DISTRICT.

Name.	Location.			
Alkali	Tp. 19, R. 19, W. 6 M	Prov.	Water Dist.	2.
Bear	Near Raft river	"	"	2.
Beaver river	Near Raft river	"	"	2.
Cahilty	Tp. 23, R. 15, W. 6 M	"	"	2.
Candle	Near Raft river	"	"	2.
Chartrand	Tp. 17, R. 21, W. 6 M	"	"	3.
Chartrand (Springs)	Tp. 17, R. 21, W. 6 M	"	"	3.
Cherry creek (Cornwall ranch)	Tp. 19, R. 19, W. 6 M	"	"	2.
Dupuis	Tp. 17, R. 21, W. 6 M	"	"	3.
Edwards	Tp. 22, R. 16, W. 6 M	"	"	2.
Greenstone creek	Tp. 17, R. 20, W. 6 M	"	"	3.
Gordon	Tp. 22, R. 21, W. 6 M	"	"	2.
Guichon creek (Chartrand's diversion)	Tp. 17, R. 21, W. 6 M	"	"	3.
Guichon creek (F. Allen's ranch)	Tp. 18, R. 21, W. 6 M	"	"	3.
Guichon creek (Chartrand's ranch)	Tp. 17, R. 21, W. 6 M	"	"	3.
Hemp	Near Raft river	"	"	2.
Heffley creek (Anderson's diversion)	Tp. 22, R. 16, W. 6 M	"	"	2.
Meadow	Tp. 17, R. 21, W. 6 M	"	"	3.
Noble	Tp. 21, R. 17, W. 6 M	"	"	2.
Paul creek (at outlet of lake)	Tp. 20, R. 16, W. 6 M	"	"	2.
Pendleton	Tp. 19, R. 19, W. 6 M	"	"	2.
Quenville	Tp. 17, R. 21, W. 6 M	"	"	3.
Three Mile	Tp. 20, R. 26, W. 6 M	"	"	2.
Witch	Tp. 18, R. 21, W. 6 M	"	"	3.

KAMLOOPS DIVISION.—List of Miscellaneous Gauging Stations.

OKANAGAN DISTRICT.

Name.	Location.			
Cinnemousun	Tp. 23, R. 7, W. 6 M	Prov.	Water Dist.	2.
Queest	Tp. 24, R. 7, W. 6 M	"	"	2.
Scotch	Tp. 22, R. 11, W. 6 M	"	"	2.
Seymour creek	Near Seymour Arm	"	"	2.
Sixmile	Near Granite creek	"	"	4.
Twenty Mile	Near Hedley	"	"	4.

ASHCROFT DISTRICT.

Hat creek (Hammond's diversion)	Tp. 19, R. 26, W. 6 M	Prov.	Water Dist.	2.

NELSON DIVISION.

C. E. Richardson, Division Engineer.

The three districts comprising the Nelson division are the Nelson, the Revelstoke, and the Cranbrook. A general description of each district will be found on pages 48 and 49 of the division engineer's report.

Nelson district has been in charge of C. E. Richardson, B.A.Sc.

Revelstoke district has been in charge of J. A. Elliot, B.A.Sc.

Cranbrook district has been in charge of D. O'B. Gill, B.Sc.

A considerable number of gauging stations were established throughout this division by the Provincial Water Rights Branch, and on some of the small over-recorded irrigation streams the hydrographic work is still continued by that branch.

Toward the end of October, Mr. Gill left the staff for active service with the Royal Engineers.

Computations for the Nelson and Revelstoke districts have been made by Mr. Richardson and Mr. Elliott, while the computations for the Cranbrook district have been made by Mr. Beeston, office engineer. All work was checked by the division engineer.

NELSON DIVISION—List of Regular Gauging Stations.

NELSON DISTRICT.

Station Number.	Name.	Location.			
3057	Cariboo creek	Near Burton City	Prov. Water	Dist. No.	6
3024	Carpenter creek	Near New Denver	"	"	6
3025	Carpenter creek	Near Sandon	"	"	6
3004	Columbia river (Castlegar)	Near Castlegar	"	"	6
3007	Columbia river (Trail)	Near Trail	"	"	6
*3066	Duncan creek	Near Howser	"	"	6
3027	Four Mile creek (below mill)	Near Silverton	"	"	6
3028	Four Mile creek (above intake)	Near Silverton	"	"	6
*3070	Fry creek	Near John nes Landing (12 miles from Kas	"	"	6
*3071	Glacier creek	Near Howser	"	"	6
3031	Goat river	Near Erickson	"	"	6
3029	Kaslo creek	Near Kaslo	"	"	6
3922	Kooskanax creek	Near Nakusp	"	"	6
3075	Kootenay river	Near Bonnington f	"	"	6
3076	Kootenay river	Near Bonnington p	"	"	6
3077	Kootenay river	Near Nelson	"	"	6
3014	Kootenay river	Near Glade	"	"	6
*3068	Lardeau river	Near Howser	"	"	6
3021	Nakusp creek	Near Nakusp	"	"	6
3017	Pend d'Oreille river	Near Waneta	"	"	6
3026	Sawmill creek	Near New Denver	"	"	6
3018	Slocan river	Near Crescent Val	"	"	6
*3023	Wilson creek	Near Roseberry	"	"	6

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data for 1914 will be returned in the report for 1915.

Nelson Division.—List of Regular Gauging Stations.

REVELSTOKE DISTRICT.

Station Number.	Name.	Location.	
3000	Akolkolex river	Tp. 22, R. 1, W. 6 M	Prov. Water Dist. No. 8
3001	Beaver river	Tp. 29, R. 25, W. 5 M	" " 8
3002	Blaeberry river	Tp. 28, R. 22, W. 5 M	" " 8
3003	Bugaboo creek	Near Spillimacheen	" " 8
*3051	Canyon creek	Tp. 25, R. 22, W. 5 M	" " 8
3005	Columbia river (Golden)	Tp. 27, R. 22, W. 5 M	" " 8
3007	Columbia river (Revelstoke).	Tp. 23, R. 2, W. 6 M	" " 8
3035	Dutch creek.	Near Fairmont Springs	" " 8
3062	Field Springs (No. 1)	Tp. 28, R. 18, W. 5 M	" " 8
3063	Field Springs (No. 2)	Tp. 28, R. 18, W. 5 M	" " 8
3064	Field Springs (No. 3)	Tp. 28, R. 18, W. 5 M	" " 8
3036	Findlay creek	Near Thunder Hill	" " 8
3008	Horsethief creek	Near Wilmer	" " 8
3053	Hospital creek (Weir)	Tp 27, R. 22, W. 5 M	" " 8
3010	Illecillewaet river (Glacier)	Tp. 26, R. 26, W. 5 M	" " 8
3009	Illecillewaet river (Revelstoke)	Tp 23, R 2, W. 6 M	" " 8
3030	Incomappleux river	Near Beaton	" " 8
3011	Kicking Horse river (Golden)	Tp. 27, R. 22, W. 5 M	" " 8
3012	Kicking Horse river (Field).	Tp. 28, R. 18, W. 5 M	" " 8
3013	Kicking Horse river (No. 2 Tunnel)	Tp 28 R. 18, W. 5 M	" " 8
3015	No. 2 Creek	Near Wilmer	" " 8
*3074	Salmon river	Near Beaton	" " 8
3034	Sinclair creek	Near Sinclair	" " 8
3019	Spillimacheen river.	Near Spillimacheen	" " 8
*3060	Shuswap river	Near Athalmer	" " 8
*3061	Stoddart creek.	Near Athalmer	" " 8
3029	Toby creek	Near Athalmer	" " 8
3032	N Vermillion creek	Near Edgewater	" " 8
3033	S Vermillion creek	Near Edgewater	" " 8
*3054	Washout creek	Near Galena	" " 8
3055	Windermere creek	Near Windermere	" " 8

NOTE.—Stat[illegible]s marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

Nelson Division.—List of Regular Gauging Stations.

CRANBROOK DISTRICT.

Station Number.	Name	Location.	
3039	Bull river	Near Bull river	Prov. Water Dist. No. 7
3038	Cherry creek	Near Wasa	" " 7
3048	Elk river	Near Elko	" " 7
3047	Gold creek	Near Newgate	" " 7
3041	Kootenay river	Near Wardner	" " 7
3045	Linklater creek	Near Newgate	" " 7
3037	Mark creek	Near Marysville	" " 7
*3056	Moyie creek	Near Kingsgate	" " 7
3044	Mud creek	Near Elko	" " 7
3046	Phillips creek	Near Roosville	" " 7
3049	Rock creek	Near Baynes	" " 7
3042	Big Sand creek	Near Jaffray	" " 7
3043	Little Sand creek	Near Jaffray	" " 7
3950	St. Marys river	Near Wycliffe	" " 7

NELSON DIVISION—List of Miscellaneous Gauging Stations.

NELSON DISTRICT

Name.	Location.	
Kootenay river	Near Taghum	Prov. Water Dist. No. 6

REVELSTOKE DISTRICT.

Name.	Location.	
Boulder creek	Tp. 3, R. 27, W. 6 M	Prov. Water Dist. No. 8
Columbia river	Near Athalmer	“ “ 8
Field river	Tp. 28, R. 18, W. 5 M	“ “ 8
Horse	Tp. 26, R. 21, W. 5 M	“ “ 8
Hospital	Tp. 27, R. 22, W. 5 M	“ “ 8

CRANBROOK DISTRICT.

Name.	Location.	
Little Bull	Near Bull river	Prov. Water Dist. No. 7
Lewis	Near Wasa	“ “ 7
Sheep	Near Wasa	“ “ 7
Skookumchuk	Near Wasa	“ “ 7

EXPLANATION OF TABLES.

For each regular gauging station the following data are given so far as available:—

1. Description of station.
2. Table of discharge measurements.
3. Daily gauge-height discharge table.
4. Tables of monthly discharges and run-off.

Under the description of stations is given the location, general information regarding the equipment, and the time the station has been maintained. Regarding stations established this year, is given briefly, the source, description of drainage area, and present uses of the river. In addition, the description covers ice conditions and their effect on the relation of gauge height to discharge.

The table of discharge measurements gives the number of measurements made during the year, the date measurement was made, name of hydrographer, the width and area of the cross section and the discharge in cubic feet per second. The zero of the gauge is placed in an arbitrary datum, and has no relation to the zero flow or bed of the river. In general, the zero is located below the lowest known flow.

The daily gauge-height discharge table gives the daily elevation of the surface of the river above the zero of the gauge, and the daily discharge in cubic feet per second for the observed gauge height.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gauge height was highest. As the gauge height is the mean for the day, there may have been short periods when the gauge height and corresponding discharges were higher than given in this column. Likewise in the column of "Minimum" the quantity given is the mean flow for the day when the mean gauge height was lowest. The column headed "Mean" is the average flow for each second during the month. On this the computations for the remaining columns are based.

DEFINITIONS OF TERMS.

The volume of water flowing in a stream called the run-off or "discharge" is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups: (1) Those which represent a rate of flow, as second feet, gallons per minute, and run-off in second feet per square mile; and (2) those which represent the actual quantity of water, as run-off in depth in inches and acre feet.

The units used in this report are second-feet, second-feet per square mile, run-off in inches, and acre-feet.

"Second-foot" is an abbreviation for a cubic foot per second (c.f.s.) and is the rate of discharge of water flowing in a stream 1 foot wide, 1 foot deep, at a rate of 1 foot per second. It is generally used as a fundamental unit from which others are computed by the use of the factors given in the following table of equivalents.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the run-off is distributed uniformly both as regards time and area.

"Run-off in inches" is the depth to which the drainage area would be covered if all the water flowing from it in a given period were conserved and uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

"Acre-foot" is equivalent to 43,560 cubic feet, and is the quantity required to cover an acre to the depth of 1 foot. It is a common unit of measurement of quantity, and is generally used in connection with storage.

CONVENIENT EQUIVALENTS.

The following is a list of convenient equivalents for use in hydraulic computations:—

1 second-foot equals 35·71 British Columbia miner's inches.

1 second-foot equals 6·23 British imperial gallons per second; equals 538,472 gallons for one day.

1 second-foot equals 7·48 United States gallons per second; equals 646,272 gallons for one day.

1 second-foot for one year covers 1 square mile 1·131 feet or 13·572 inches deep.

1 second-foot for one year equals 31,536,000 cubic feet; equals 724 acre-feet.

1 second-foot equals about 1 acre-inch per hour.
1 second-foot for one day equals 86,400 cubic feet; equals 1·983 acre-feet.
1 second-foot for one 28-day month equals 55·52 acre-feet.
1 second-foot for one 29-day month equals 57·50 acre-feet.
1 second-foot for one 30-day month equals 59·48 acre-feet.
1 second-foot for one 31-day month equals 61·46 acre-feet.
1 second-foot for one 28-day month covers 1 square mile 1·041 inches deep.
1 second-foot for one 29-day month covers 1 square mile 1·079 inches deep.
1 second foot for one 30-day month covers 1 square mile 1·116 inches deep.
1 second-foot for one 31-day month covers 1 square mile 1·153 inches deep.
100 British imperial gallons per minute equals 0·268 second-feet.
100 United States gallons per minute equals 0·223 second-feet.
1,000,000 British imperial gallons per day equals 1·86 second-feet.
1,000,000 United States gallons per day equals 1·55 second-feet.
1,000,000 British imperial gallons equals 3·68 acre-feet.

1,000,000 United States gallons equals 3·07 acre-feet.
1,000,000 cubic feet equals 22·95 acre-feet.
1 acre-foot equals 43,560 cubic feet.
1 acre-foot equals 271,472 British imperial gallons.
1 acre-foot equals 325,850 United States gallons.
1 inch deep on 1 square mile equals 2,323,200 cubic feet.
1 inch deep on 1 square mile equals 0·0737 second-foot per year.
1 acre equals 43,560 square feet.
1 cubic foot equals 6·23 British imperial gallons.
1 cubic foot equals 7·48 United States gallons.
1 cubic foot of water weighs 62·4 pounds.
1 horse-power equals 550 foot-pounds per second.
1 horse-power equals 746 watts.
1 hores-power equals 1 second-foot falling 8·80 feet.

To calculate water power quickly:

$$\frac{\text{sec.-ft.} \times \text{fall in feet}}{11} = \text{net horse-power on water wheel, realizing 80 per cent}$$

of theoretical power.

ACCURACY AND RELIABILITY OF DATA.

Practically all discharge measurements made under fair conditions are well within 5 per cent of the true discharge of the time of observation. Inasmuch as the errors of meter measurements are largely compensating, the mean rating curve, when well defined, is much more accurate than the individual measurements.

In order to give information regarding the probable accuracy of the computed results, an accuracy column is inserted in the monthly discharge table. Accuracy "A" indicates that the mean accuracy is probably accurate within 5 per cent; "B" within 10 per cent; "C" within 15 per cent; "D" within 15 to 25 per cent. Special conditions are covered by foot notes.

The accuracy in many cases is not as great as we would wish, the area covered is very large, and a large number of the stations have been maintained for less than a year. Future observations may render necessary a certain amount of revision of the data here supplied.

The topographic surveys of the province are very incomplete, and the drainage areas are, in many cases, only approximate; consequently the figures showing discharge per square mile, and run-off depth in inches may be somewhat in error.

METHODS OF MEASURING STREAM FLOW.

It is not intended to enter into a discussion of these methods in the report. The methods used are practically identical with those used by the Water Resources Branch of the United States Geological Survey, recognized the most up-to-date method of stream flow measurement. The text of "River Discharge" by Holt and Grover amply illustrates the methods employed.

CO-OPERATION AND ACKNOWLEDGMENTS.

Thanks are due to Mr. G. R. G. Conway, of the British Columbia Electric Railway Company; Mr. R. F. Hayward, of the Western Canada Power Company, Vancouver; and Mr. Wm. Young, Comptroller of Water Rights, Department of Lands, Victoria, B.C., for stream flow and other data submitted with this report. Thanks are also due Mr. F. H. Peters, Commissioner of Irrigation, Department of the Interior, Calgary, by whose courtesy our current-meters have been rated each year.

REPORT

OF THE

BRITISH COLUMBIA HYDROGRAPHIC SURVEY FOR 1914

CHAPTER 2

Coast Division

REPORT OF C. G. CLINE, B.A.Sc., D.L.S.

Division Engineer.

CHAPTER II.

COAST DIVISION.

TERRITORY.

The boundaries of the Coast division follow the lines of the watersheds as much as possible in order to facilitate the work of stream measurement. The districts into which the Coast division has been divided follow the same plan. For this reason it is rather difficult to exactly outline the boundaries of the division and districts.

The Coast division includes the southwestern portion of British Columbia as far as North Bend on the Canadian Pacific railway, and Lillooet on the Pacific Great Eastern Railway; It also includes the whole of Vancouver island. All stations numbered between 1,000 and 1,065 are in the Coast division. Reference to the key map will show the general extent of the territory covered.

USES OF WATER.

In this division the chief use to which water may be put is for power, and a large number of streams are commercially valuable for this purpose only.

PRESENT WATER-POWER DEVELOPMENTS.

A small portion only of the power available is at present developed, and a list of the streams on which water power is being developed is included in this report. Some of these plants are described herein, but most of the descriptions were given in the report for 1913. In such cases the description is not repeated, but proper references are given.

POSSIBLE WATER-POWER DEVELOPMENTS.

In last year's report a list was given of a number of streams with water-power possibilities, supplemented in most cases by a general description of a practicable scheme of development. In this report, this list is reprinted and amplified, but descriptions are not reprinted; proper references are, however, inserted. Streams not included in last year's list are described in detail herein. This list is being made as complete as possible as new ground is covered from year to year.

MUNICIPAL SUPPLY.

Every city and municipality of any size requires a good supply of clear, uncontaminated water for domestic purposes. At present regular measurements are being made on a number of streams used in this way, and a list of these is included herein. As the country develops the number of streams required for such a purpose will naturally increase.

RECLAMATION.

In certain parts of the division there are tracts of land, which, though they are at present of comparatively little value for agricultural purposes could be reclaimed at a reasonable expense. In constructing a system of dykes and making channel improvements to reclaim such land, there is generally some stream which must be controlled. Accurate records of the run-off of such rivers is of prime importance. A number of these streams are being gauged at present a list of which is appended.

IRRIGATION.

In the vicinity of Lillooet it is necessary to irrigate the farms, and water from a number of streams is used for this purpose. A list is here given of the irrigation streams on which regular measurements are being made during the irrigation season, and includes a number of streams which are not used for irrigation at present, but which may be used at some time in the future, when the necessary engineering works have been constructed.

LOCATION OF STATIONS.

Gauging stations are generally established close to possible future points of diversion for water supply, irrigation or power. On some streams, however, the desired location is so difficult of access that the cost of maintaining a gauging station would be prohibitive; in such cases, stations are established at more convenient places and from the records so obtained the stream flow at the desired site is estimated.

PRECIPITATION AND TEMPERATURE.

Records have been prepared showing the monthly precipitation and the mean monthly temperatures for 1914 at the various stations, and the variation from the average where the records have been kept for a sufficient number of years to render these figures of any value is also given. A study of these tables will show the general effect of these important factors on the flow of the streams, and the figures for the variation from the average for a number of years will indicate to some extent, the general characteristics of the stream flow for 1914 as compared with other years.

COMPARISON OF STREAM MEASUREMENTS.

A table is also included, giving the monthly discharges of a number of gauging stations for the past two or three years, thus providing a ready means for the comparison of yearly run-off. The continuance of the stream measurement work will make comparisons of this nature increasingly valuable from year to year.

One of the outstanding features in 1914 was the very heavy freshet which, with the exception of the Fraser river, occured early in January on nearly all the streams in the Coast division. A winter flood of this nature is not an uncommon occurrence in this part of the country, although it is not usually so great as during this past year.

DISTRICTS.

The territory comprising the Coast division has been divided into three districts. The Southern district includes that portion of the Railway Belt which lies in the Coast division, and some contiguous watersheds not included in either of the other districts. The Lillooet district includes the streams along the route of the Pacific Great Eastern railway from the head of Howe sound to the vicinity of Lillooet. Beyond Lillooet the territory is included in the Kamloops division. Vancouver island constitutes a district by itself.

Work was started in the Southern district in the Railway Belt late in the fall of 1911, so that on some of the streams there are now three years' complete measurements—1912, 1913, and 1914. The monthly and yearly discharges at these stations are tabulated in this report for the purpose of comparing the flow for 1914 with that of the previous two years. Such comparisons should be of considerable value in considering streams on which there are measurements for one year only. The work in the Southern district was extended during 1913 and 1914 to include a number of streams outside the Railway Belt.

Work was started in the Lillooet district in the fall of 1913, so that on some of the streams there is one year's complete records. A number of other stations were established in 1914, and the list will probably be somewhat increased in 1915. Transportation conditions in this district have until recently been very poor, and on that account the work has been delayed. The completion of the Pacific Great Eastern railway from Squamish to Lillooet will greatly better conditions during 1915, and will ensure a much greater number of measurements in a shorter time.

On Vancouver island, work was started by the engineers of this survey in the spring and summer of 1914. On some of the streams the stations had already been established by the engineers of the Provincial Water Rights Branch, and in such cases records are available for a whole year. Some of the stations were not established until after the spring freshet, so that the rating curves are not well defined for the higher stages; this will be remedied during 1915.

General descriptions have been prepared by the engineers in charge of each district, covering more especially the local conditions and particulars of the work peculiar to each district.

SOUTHERN DISTRICT.

The general characteristics of the Southern district are determined mainly by the mountainous nature of the country and its proximity to the Pacific ocean.

The commercial and industrial activities of the cities and harbours of the Burrard peninsula have been developed within a few miles of large areas of virgin forests and snow-capped mountains. The settlement is confined mainly to the Fraser valley, and the valleys of the tributary streams are almost entirely unoccupied. The transportation facilities in the valleys are very poor, and it is hard to find any one to read the gauges, and it is both difficult and expensive to maintain gauging stations except near the mouths of these streams.

The influence of the mountains is shown in the local variations in the precipitation. In the lower Fraser valley the average rainfall is about 60 inches. At Ladner and Steveston, which are not near the hills, it is only 40 inches or less. It increases rapidly as the hills are approached, sometimes doubling in amount within a few miles. At Coquitlam junction the average is about 70 inches, while at lake Coquitlam, some 10 miles farther north, the average is about one hundred and fifty. This is the largest average precipitation recorded at any of the stations, though even this amount is probably exceeded on some of the mountains.

The effect of the ocean is seen in the mildness of the climate of the lower Fraser valley. Near sea-level there is very little ice and snow in winter, and the summer is not exceedingly hot, the seasonal variation at any one place being comparatively small. There is, however, a considerable difference of temperature at different altitudes, with the result that though there is little or no snow at sea-level, there is a very heavy fall of snow among the hills. On the mountain peaks snow remains nearly all summer.

A reference to the tables of precipitation and temperature for the Southern district will show more definitely the special characteristics of the weather for 1914. The stations near the top of the tables are the ones nearest the coast, while those near the bottom are the ones farther east. The first four stations, Britannia Beach, Vancouver, Steveston, and Ladner are all on the coast, with Britannia Beach farthest north and Ladner farthest south. One set of tables gives the total monthly and annual precipitation and the mean monthly and annual variation from the corresponding averages for the last ten years or more.

This second set of tables shows how the precipitation and temperature for 1914 compared with the average. On the whole, the year was somewhat drier and considerably warmer than usual. The most unusual occurrence was the extra heavy precipitation in January, accompanied by warm weather. This caused a very large run-off during the month, and as a result the amount of snow on the hills was considerably reduced. The warmer weather during the spring and summer resulted in an earlier melting of the snow than usual, with a consequent earlier low-water period toward the end of the summer, while on the other hand the heavier precipitation of September and October ended the low-water stage at an earlier date than usual. The warm weather of November was followed by a cold snap in the latter part of December.

The effect of these variations in the weather is seen in the flow of the streams, the table of comparison of monthly discharges gives the average monthly discharges for certain streams for the last three years. It shows a larger discharge for 1914 during January and also in March and April. The flow fell off for July, and the summer low-water came in August and early in September. There were freshets in September and October and high water in November. Towards the end of December the streams were low. For the whole year, the warmer weather caused a larger run-off than usual on the streams which have very extensive snowfields; on the others, the lighter precipitation was reflected in the somewhat smaller discharge. The Fraser river, having such an extensive drainage area, responds only to variations common to the greater part of the country through which it flows.

LILLOOET DISTRICT.

This district includes the country along the Pacific Great Eastern railway from Squamish to Lillooet. Squamish is situated on tidewater at the head of Howe Sound. Lillooet is on the Fraser river, 120 miles inland, and at an elevation of 850 feet. Midway between the two is the Lillooet river, with a broad valley known as Pemberton Meadows.

From Squamish, the railroad climbs up through the canyon of the Cheakamus river to the lakes at the summit, rising 2,000 feet in 38 miles. There are four lakes at practically the same elevation, and they extend about 8 miles. Green lake is the largest and discharges through Green river into the Lillooet river, falling 1,400 feet in 14 miles. Nairn falls is located about 8 miles from the mouth, and has a drop of some two hundred feet in a quarter of a mile. Soo river and Sixmile creek empty into Green river above the falls.

The Lillooet river flows for a considerable distance through the Pemberton Meadows, and enters Lillooet lake just below the mouth of Green river. During this part of its course the Lillooet river has very little fall, it consequently overflows its banks, flooding most of the bottom land in the meadows. There is a large area of very fertile land in the Lillooet valley, and when some system of controlling the river is put in operation it should develop into a very important agricultural district.

The town of Lillooet is on the west side of the Fraser river, 3 miles east of Seton lake. It has a population of about 600 and is situated in quite an extensive farming district. The climate is very dry, so that irrigation is absolutely necessary for the production of crops. The large amount of bright sunshine and warm weather during the summer, combined with the general fertility of the soil, produces very rapid growth when the necessary moisture is supplied by irrigation. Measurements are being made on a number of irrigation streams in this vicinity.

VANCOUVER ISLAND DISTRICT.

The Vancouver Island district comprises the whole of Vancouver island. The island has an area of approximately 12,900 square miles, being some 260 miles in length, with an average width of 50 miles. Vancouver island lies off the southern coast of British Columbia, and trends N. 50° W. along the coast.

Vancouver island is divided into two principal drainages, those of the east and west coast, by the Beaufort range of mountains. This range extends from a group in the south of which mount Arrowsmith at an altitude of 5,900 feet predominates to a much larger group in the north, several of whose peaks rise over 7,000 feet. Glaciers are to be found on several of the higher peaks. With the mountainous interior and a comparatively narrow coastal plane, the rivers, for the most part, are short and have considerable fall. This is most advantageous for hydro-electric developments. The streams which do not rise from lakes are mostly flashy.

The climate is moderate, the mean temperatures of each month varying from a minimum of about 30 degrees to a maximum of 65 degrees, except in the higher altitudes. The precipitation is least on the southeast coast, averaging some 30 inches. It increases rapidly especially up to the west coast, to a precipitation of about 130 inches at the north end of the island. The rainfall is usually least in the months of July and August and greatest in the month of November in all parts of Vancouver island.

The accompanying tables show the temperatures and precipitation at five different localities for the year 1914. Tables giving the monthly variation, for 1914, from the monthly average temperature and precipitation for the past ten years or more, are also shown. From these tables it is seen that the temperature on the whole island was above the average, while the precipitation was also higher.

The means of transportation are improving rapidly. The Esquimalt and Nanaimo Railway, which has been operating between Victoria, Nanaimo, and Port Alberni, opened its extension from Parksville to Courtenay in August, 1914. The Canadian Northern Pacific railway line from Victoria to Alberni is nearing completion and a line is located as far as Campbell river. The Great Northern operates a line on the Saanich peninsula from Sidney to Victoria. The Canadian Northern also has a line under construction from Victoria to Patricia bay on the Saanich peninsula. There is a good coastal service maintained by several navigation companies. These, with the excellent government highways, will greatly assist in the further development of Vancouver island.

The excellent agricultural possibilities on the island, due to the richness of the soil and the abundant rainfall, is well exemplified by the fine farms in the older settlements of the Saanich, Cowichan, and Comox districts.

Vancouver island is rich in mineral wealth. The large coal deposits in the vicinity of Nanaimo and Cumberland are all being extensively mined. On the west coast, valuable deposits of gold and copper have been found. Cement is manufactured extensively in the Saanich district. Good pottery clay is found near Victoria; pottery to the value of $90,000. and bricks to $140,000 were manufactured in 1913. Two powder factories have plants on the island.

The timber wealth of the island is its greatest asset. Considerable timber has already been cut, but the lumber industry may still be considered in its infancy.

The British Columbia Electric Railway Company installed the first hydro-electric plant on Vancouver Island on the Goldstream river in 1898, about 15 miles from Victoria. This plant at present develops 3,000 horse-power. There are four units: two 350 k.w., one 500 k.w., and one 1,000 k.w. Current is generated at 700 volts, and is stepped up to 17,500 volts. The development consists of one pipeline of 33 inch pipe, 4,000 feet long, branching into 30 inch pipes at the back of power-house. The head is 680 feet.

Another more recent development of the British Columbia Electric Company is at the mouth of Jordan river, where 25,000 horse-power is developed from three units: two 6,000 horse-power and one 13,000 horse-power. The plant works under a high pressure head of 1,145 feet. The pipeline for the first two units (4,000 k.v. a. generator, and Doble wheel) is 2,600 feet in length. It is 50 inches in diameter at intake, and Ys to 36-inch pipes, which are reduced to 30 inches at the power-house. The third unit (8,000 k.v.a. generator, and Pelton Doble wheel) uses a 54-inch pipe at the intake, reduced to 44 inches at the power-house. Current is generated at 2,200 volts and is stepped up to 60,000 volts.

Both these plants are used to supply light and power in the city of Victoria and surrounding district.

Impounding dam of Puntledge River Hydro-Electric Installation on Puntledge river near outlet rom Comox lake.

The Puntledge River Hydro-Electric Installation, owned by the Canadian Collieries (Dunsmuir) Limited, is located on the Puntledge river about 6 miles above Courtenay. The plant is operated under a static head of 350 feet. The pipeline is 10,500 feet in length. The line consists of a single 8 foot wooden stave pipe from forebay, to a Y for two 6 foot pipes; only one is used at present and leads to a Y from which two 50 inch pipes carry water to the power-house.

Diversion dam showing flume to intake, of Puntledge River Hydro-Electric Installation on Puntledge river about two miles below impounding dam.

Present installation developing 12,500 horse-power, consists of one-half of ultimate plant. The generators are 4,400 k. v. a., 13,200 volt machines. The turbines are of Francis reaction type with single runner on horizontal axis.

This plant supplies light and power for the mines and the several towns of Cumberland, Bevan, Union Bay, and Courtenay.

The Campbell River Power Company have made extensive surveys in view of a large development at the falls on Campbell river, about 7 miles from the mouth.

The Ritchie Agnew Power Company contemplates the installation of a plant to develop about 35,000 horse-power on the Stamp river at Stamp falls, about 8 miles from Alberni.

There are many other streams on which surveys have been made, and which offer good possibilities for hydro-electric development, notably, Little Qualicum river, Nanaimo river, and Sproat river.

Owing to the abundant rainfall, practically no water is required for irrigation. The uses of water on Vancouver island are principally confined, therefore, to municipal water supply and power development.

The numerous large lakes which are located throughout the island afford a cheap means of assembling the timber cut from their shores, as well as good storage for large developments. Many ranchers have small hydro-electric plants to supply light and power for their own use. This is made practicable by the many small streams coming from the hills and cheap developments are possible. For the manufacture of electric chemicals, Vancouver island offers several excellent developments. On Cowichan river, the Government have a large fish hatchery, and the Cowichan river has been reserved for fishing.

Stream measurements were started in May, 1914, on Vancouver island, by the British Columbia Hydrographic Survey. Previous to that time, work had been done by the Provincial Water Rights Branch. Sixteen regular metering stations were maintained and rated during the year The Provincial Water Rights Branch gave every assistance possible and supplied much valuable data on many of the streams on which they had already done work.

During 1915 it is hoped to extend the work to the west coast and north end of the island, besides maintaining the stations already established.

DEVELOPED WATER-POWERS.

These plants are described either in this report or in the report for 1913, i.e., Water Resources Paper No. 8. This list will show where these descriptions can be found. The measurements taken in 1914 are given in the 1914 report.

SOUTHERN DISTRICT.

Coquitlam river	1913	report (Water Resources	Paper No 8).
Gilley creek	1913	"	"
Power river	1913	"	"
Stave river	1913	"	"

LILLOOET DISTRICT.

McGillivray creek	1914	report (Water Resources	Paper No. 14)
			Seton creek.

VANCOUVER ISLAND.

Puntledge river	1914	report (Water Resources	Paper No. 14).
Jordan river	1914	"	"
Goldstream river	1914	"	"

POSSIBLE WATER-POWER DEVELOPMENTS.

A general description of each possible development has been given either in this report or in the report for 1913. This list will show where these descriptions may be found. The stream-flow data are included in the 1914 report.

SOUTHERN DISTRICT.

Chehalis river	1913	report (Water Resources	Paper No. 8).
Chilliwack river	1913	"	"
Coquihalla river	1913	"	"
Jones Creek	1913	"	"
Mesliloet (Indian river)	1913	"	"
Mesliloet river tributaries	1913	"	"
Nicolum river	1914	"	"
North Lillooet river	1913	"	"
Rainbow creek	1913	"	"
Raven creek	1913	"	"
Samallow river	1914	"	"
Silver-Hope creek	1913	"	"
Silver-Pitt creek	1913	"	"
Slollicum creek	1913	"	"
South Lillooet river	1913	"	"

LILLOOET DISTRICT.

Bridge river	1913	report (Water Resourses Paper No. 8).
Cheakamus river	1913	“ “
Cayuse creek	1914	“ “ 14
Green river	1913	“ “
Little Blackwater river	1914	“ (Seton) “
Soo river	1914	“ “

VANCOUVER ISLAND.

Campbell river	1914	report (Water Resources Paper No. 14).
Stamp river at falls	1914	“ “
Little Qualicum river	1914	“ “
Nanaimo river	1914	“ “
Sproat river	1914	“ “
Stamp river at Great Central lake	1914	“ “

IRRIGATION STREAMS.

A general description of each stream has been given either in this report or in the report for 1913. This list will show where the description may be found. The measurements made in 1914 are given in the 1914 report.

SOUTHERN DISTRICT.

Silver-Hope creek, 1913 report. (Water Resources Paper No. 8).

LILLOOET DISTRICT.

Cayuse creek	1914	report (Water Resources Paper No. 14).
Fountain creek	1914	“ “
Laluwissin creek	1914	“ “
Riley creek	1914	“ “
Texas creek	1914	“ “

VANCOUVER ISLAND.

No irrigation.

MUNICIPAL WATER SUPPLY.

A general description of each stream has been given either in this report or in the report for 1913. This list will show where these descriptions may be found. The measurements for 1914 are given in the 1914 report.

SOUTHERN DISTRICT

Capilano creek	1913 report (Water Resources Paper No. 8).
Lynn creek	1913 “ “
Seymour creek	1913 “ “
Silver-Pitt creek	1913 “ “
Trout Creek	Miscellaneous measurements only—1914 report.
Windermere creek	Miscellaneous measurement only—1914 report.

VANCOUVER ISLAND.

Shawnigan creek................	1914 report.
Soo river........................	Miscellaneous measurements only.

RECLAMATION AND DRAINAGE

The data for 1914 of the streams which are of interest in connection with reclamation and drainage projects is given in this report and the description in the 1913 report.

SOUTHERN DISTRICT.

Chilliwack river.
Silver-Pitt creek.

LILLOOET DISTRICT.

Lillooet river.

TOTAL MONTHLY PRECIPITATION, Southern District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Britannia Beach..................	16·85	3·80	5·86	5·32	1·48	2·08	0·48	0·77	8·25	14·42	14·94	2·45	70·70
Vancouver..........................	10·56	4·87	3·33	3·28	0·74	3·58	0·42	0·75	6·86	6·37	10·18	2·84	53·78
Steveston..........................	8·41	2·10	1·44	2·46	0·53	2·44	0·13	0·37	3·60	4·41	6·17	2·59	34·65
Ladner..............................	5·45	2·60	1·90	1·65	0·45	1·90	0·35	0·20	2·65	2·60	6·35	0·95	27·05
Buntzen lake.......................	19·29	7·82	8·04	5·08	3·38	4·69	0·80	1·13	10·99	15·25	18·90	3·59	98·96
Coquitlam lake.....................	26·51	9·54	10·00	6·92	4·71	5·26	0·57	1·30	13·85	20·27	25·37	5·28	129·58
Coquitlam junction............	13·21	5·69	4·09	4·70	1·36	4·19	0·77	0·88	7·98	......	12·09	3·23	......
New Westminster............	9·95	4·78	3·27	3·95	1·04	4·11	0·56	0·68	5·57	5·62	10·95	2·44	52·92
Stave Falls....................	12·22	4·72	5·60	7·49	2·65	4·18	0·87	0·54	9·86	7·63	15·20	3·13	74·09
North Nicomen..................	17·01	4·44	5·09	5·00	2·61	3·08	0·08	0·51	8·15	6·45	12·64	2·70	67·76
Agassiz..........................	13·96	1·06	3·12	2·94	3·55	5·18	0·15	0·60	6·29	7·53	14·72	0·53	62·63
Jones creek.......................	15·19	4·46	8·87	6·22	7·15	5·21	1·06	0·89	7·01	5·50	14·75	2·31	78·62
Chilliwack........................	14·68	3·27	4·49	3·94	1·97	3·14	0·17	0·45	6·35	4·71	9·87	2·08	55·12
Hope..............................	10·94	4·31	5·01	3·62	3·10	1·96	0·11	0·79	......	3·83	10·25	1·79	......

MEAN MONTHLY TEMPERATURE, Southern District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Britannia Beach..................	38·8	38·9	46·3	49·2	55·8	55·0	59·8	59·6	53·9	53·5	42·2	37·0	49·2
Vancouver..........................	40·5	38·7	44·9	50·6	56·4	58·7	63·5	61·8	54·8	52·5	44·5	36·4	50·3
Steveston..........................	40·6	38·0	42·6	47·8	53·1	57·1	61·6	58·8	53·8	50·6	43·8	34·2	48·5
Ladner..............................	43·4	38·8	45·1	50·4	55·0	56·8	62·5	60·4	55·9	54·2	45·1	34·5	50·2
New Westminster..............	38·8	37·7	44·7	50·6	57·4	59·3	64·1	63·5	55·0	53·1	43·2	35·1	50·2
Stave Falls........................	38·2	36·1	43·4	49·7	58·1	60·5	65·9	64·3	55·4	53·0	43·6	33·7	50·2
North Nicomen..................	38·6	38·1	46·0	52·0	58·8	59·9	64·7	64·4	55·2	53·5	44·1	34·6	50·8
Agassiz............................	38·0	39·6	45·0	51·6	56·3	57·2	62·1	63·0	54·2	50·4	42·6	35·2	49·6
Jones lake.........................	30·0	29·0	34·0	40·0	50·0	51·0	60·0	61·0	50·0	45·0	35·7	25·5	42·6
Chilliwack........................	36·9	37·3	45·1	51·2	54·8	58·3	63·2	61·7	54·7	52·0	43·3	34·1	49·4
Hope................................	33·6	34·2	42·4	51·2	56·5	58·6	65·3	64·7	......	50·4	40·1	29·8	......

DIFFERENCE FROM AVERAGE PRECIPITATION, Southern District, 1914.

(Difference of Total for month from monthly average for previous ten year or more.)

Locality.	No. Years Records	Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Vancouver	14	2·38	−1·91	−1·15	1·14	2·74	0·77	−1·20	−1·04	2·54	0·63	−1·27	−4·72	−6·57
Steveston	17	2·92	−1·79	−1·00	0·58	−1·73	0·55	−0·81	−0·77	1·12	1·06	−0·87	−2·72	−3·46
Ladner	14	0·66	−0·60	−1·11	0·16	−1·87	0·24	−0·78	−0·95	−0·11	−1·51	0·19	−3·95	−9·95
Buntzen lake	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	−14·1
Coquitlam lake	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	−25·8
Coquitlam Junction	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Westminster	27	1·38	−0·32	−1·26	0·63	−1·18	0·98	−0·75	−1·28	1·94	0·22	1·82	−5·57	−3·39
North Nicomen	21	8·25	−3·89	−0·95	0·24	−1·95	−0·99	−1·86	−1·75	3·52	−1·02	0·42	−6·97	−6·95
Agassis	24	7·16	−1·56	−1·89	−1·23	−0·96	0·36	−2·15	−2·15	1·63	1·73	5·81	−6·84	−0·09
Chilliwack	11	6·16	−3·10	0·06	0·23	−1·72	0·00	−1·56	−1·65	2·25	−1·22	0·53	−6·63	−6·95

N.B.—All quantities are plus unless otherwise designated

DIFFERENCE FROM AVERAGE TEMPERATURE, Southern District, 1914.

(Difference of Average for month from monthly average for previous ten years or more.)

Locality.	No. Years Records	Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Vancouver	14	3·0	0·3	2·8	1·6	2·8	1·0	0·4	0·3	−0·9	3·1	2·2	−2·5	−14·1
Steveston	19	4·8	−0·3	1·9	1·3	0·8	0·5	−3·3	−0·4	0·1	2·6	1·6	−4·8	−11·4
Ladner	14	9·6	1·3	3·5	3·5	2·5	−0·4	1·0	1·3	1·5	5·0	1·4	−4·0	−23·4
New Westminster	27	2·2	−0·4	1·8	2·2	3·2	0·1	1·6	1·0	−1·7	3·7	1·6	−2·5	−12·8
North Nicomen	21	3·7	0·6	3·4	3·2	3·8	0·9	0·1	1·0	2·5	5·2	1·1	−3·9	−14·6
Agassiz	24	3·6	1·8	1·0	5·1	2·1	−1·8	−1·9	−0·3	−2·6	−0·4	1·5	−2·0	− 6·1
Chilliwack	11	6·7	−0·2	2·6	1·4	−0·4	−1·1	−0·9	−1·5	−2·2	1·5	2·0	−3·2	− 4·7

N.B.—All quantities are plus unless otherwise designated.

COMPARISON OF MONTHLY DISCHARGES, Southern District, 1914.

Locality.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept	Oct.	Nov.	Dec.	Mean.
Coquihalla river	1912	942	981	415	884	2,662	2,059	799	460	365	471	1,004	587	969
	1913	557	592	391	1,195	3,330	3,961	1,705	580	1,000	1,665	1,243	719	1,412
	1914	1,350	560	1,560	2,850	3,980	2,630	720	279	444	345	1,460	674	1,405
Chilliwack river	1912	1,518	1,870	865	980	4,581	6,387	3,089	1,386	936	893	2,347	1,232	2,175
	1913	1,208	1,942	1,064	1,557	4,416	4,779	5,724	2,303	2,664	2,770	2,533	1,557	2,710
	1914	4,280	1,170	2,250	3,110	4,170	4,000	3,140	1,320	1,310	1,510	3,080	1,340	2,560
Chehalis river	1912	......	......	248	425	904	760	386	310	390	631	2,127	999	......
	1913	551	1,350	1,080	1,465	2,460	1,693	916	441	1,010	1,765	3,295	1,615	1,467
	1914	4,230	1,570	3,800	3,610	1,980	1,130	690	270	990	2,040	4,480	730	2,130
Fraser river	1912	..	....	16,150	40,720	150,000	186,000	136,000	113,000	70,170	53,000	39,300	27,800	......
	1913	17,800	25,300	19,000	34,400	82,300	306,800	201,000	177,000	113,900	60,300	37,200	27,000	92,120
	1914	39,500	29,600	34,600	72,800	187,000	243,600	216,000	119,000	76,000	70,800	64,300	41,100	99,500
Jones creek	1912	86	136	55	64	192	270	207	177	96	82	154	98	135
	1913	60	89	68	94	238	395	350	199	178	201	175	94	180
	1914	173	57	109	158	223	221	213	119	114	96	215	73	148
South Lillooet river	1912	1,412	1,393	210	455	802	817	387	520	533	733	2,111	1,062	872
	1913	593	1,180	693	872	1,238	1,095	757	303	526	1,021	2,038	900	934
	1914	1,450	532	1,040	1,0[illegible]	594	367	161	108	656	1,210	2,280	387	818

TOTAL MONTHLY PRECIPITATION, Lillooet District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov	Dec.	Year.
Pemberton hatchery	5·85	1·51	2·81	2·34	1·58	1·57	0·34	0·41	5·41	4·35	8·44	0·98	35·32
Pemberton Meadows	10·73	2·28	3·03	2·46	0·76	1·35	0·28	0·08	4·63	5·46	9·23	1·65	41·99
15-mile ranch (Pavilion)	1·40	0·46	0·39	0·24	0·89	1·18	0·44	0·10	1·92	0·37	2·50	0·45	10·54

MEAN MONTHLY TEMPERATURE, Lillooet District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Pemberton hatchery	30·4	30·4	39·4	48·5	54·7	58·7	64·9	64·8	53·4	48·4	37·0	27·3	46·5
Pemberton Meadows	27·9	27·2	37·5	47·6	56·2	59·9	64·4	62·3	53·6	49·1	36·3	20·8	45·2
15-mile ranch (Pavilion)	24·6	24·2	39·3	50·3	57·1	60·9	69·7	69·3	55·2	48·6	34·8	18·8	46·0

TOTAL MONTHLY PRECIPITATION, Vancouver Island District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Victoria	8·47	1·56	2·05	1·04	0·18	1·67	....	0·18	1·98	2·58	5·83	0·59	.. ..
Sooke	14·22	3·60	....	2·65	0·58	2·93	0·06	0·36	3·42	6·22	9·48	1·42	
Shawnigan lake	13·29	2·42	2·99	2·31	0·88	2·61	0·11	0·10	3·16	5·18	8·22	1·75	43·02
Cobble Hill	11·32	1·99	1·93	2·33	0·36	2·08	0·11	0·15	2·72	4·40	8·73	1·02	37·14
Cowichan (Tzouhalem)	13·04	2·35	2·08	2·78	0·31	2·29	0·15	0·26	3·40	5·15	9·40	1·53	42·74
Ladysmith	17·34	4·40	2·55	3·85	0·31	2·11	0·38	0·07	4·48	10·26	10·71	1·69	58·15
Nanaimo	10·89	2·60	2·54	2·60	0·16	1·70	0·10	0·33	4·03	6·13	7·62	2·16	40·86
Nanoose bay	9·17	2·26	2·60	2·60	0·14	3·15	0·16	0·25	4·61	6·12	7·36	1·44	39·86
Qualicum Beach	7·75	2·38	2·34	2·88	0·39	2·41	0·28	0·34	4·77	8·01	7·15	1·07	39·77
Campbell lake	....	....	....	....	..		...	....	3·90	8·42	13·29	....	..
Alberni	16·29	5·72	8·14	7·07	1·07	3·64	0·31	0·17	7·08	16·08	14·18	2·51	82·26
Alert bay	6·13	3·84	5·00	3·60	1·04	0·86	1·25	1·00	4·00	6·88	9·42	2·74	45·76
Clayoquot	21·55	11·59	13·72	14·08	2·65	3·08	1·05	1·66	9·11	19·44	24·35	7·44	129·72
Quatsino	18·46	5·76	12·42	9·36	3·83	1·34	0·74	1·05	....	14·51	17·35	....	.. ..
Holberg	23·89	9·57	17·94	11·80	7·15	2·06	3·50	2·66	6·97	19·56	26·47	5·57	137·14

MEAN MONTHLY TEMPERATURE, Vancouver Island District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Victoria	42·1	42·0	46·9	50·5	55·9	55·9	59·7	59·5	53·6	52·7	45·0	39·6	50·
Sooke	39·7	41·0	......	48·6	53·4	55·2	59·6	59·5	58·9	52·2	44·2	38·3	..
Shawnigan lake	37·0	37·8	43·6	48·7	55·5	57·8	69·2	64·1	54·1	50·6	40·9	33·9	49·4
Cobble Hill	38·8	38·1	43·5	47·9	54·4	56·5	60·5	59·0	53·2	55·4	42·6	36·2	48·
Cowichan (Tzouhalem)	40·2	39·8	45·4	50·0	55·5	58·7	63·9	62·4	55·4	50·1	43·8	36·0	50·1
Ladysmith	37·7	37·6	44·4	49·6	56·0	57·8	62·6	62·7	54·1	51·7	41·8	35·3	49·
Nanaimo	39·8	39·6	44·7	49·6	57·0	58·8	64·4	63·7	54·7	51·8	43·6	36·9	50·
Nanoose bay	38·0	38·1	43·4	48·3	54·4	56·9	62·5	61·7	50·7	50·8	42·1	35·2	48·
Qualicum Beach	37·1	36·4	42·1	46·8	53·5	56·6	62·4	61·3	52·9	50·3	40·5	32·1	47·
Campbell lake	....	....	....	....	....	....	....	....	53·1	50·6	40·8	....	
Alberni	36·1	37·1	44·2	49·4	54·3	57·7	63·6	66·9	55·5	53·0	42·6	34·4	49·
Alert bay	38·4	42·3	45·1	50·4	53·0	54·6	57·2	57·9	53·4	53·8	45·3	38·1	49·
Clayoquot	41·1	42·3	45·2	48·9	54·8	55·4	58·8	59·1	54·2	53·1	45·5	41·2	50·
Quatsino	37·6	39·8	42·9	47·6	51·7	54·5	58·9	59·2	....	51·6	43·4	35·8	.
Holberg	37·8	39·7	43·6	47·7	52·8	54·1	58·5	61·4	54·8	54·2	44·7	36·2	48·

DIFFERENCE FROM AVERAGE PRECIPITATION, Vancouver Island District, 1914.

(Difference of Total for month from monthly average for previous ten years or more.)

Locality.	Jan.	Feb	Mar.	Apr.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Victoria ..	3·93	−2·01	−0·14	−0·76	−1·17	−0·71	−0·35	−0·41	−0·12	0·32	−0·24	−3·66	−7·34
Nanaimo ..	6·24	−1·54	−0·53	0·92	−1·94	−0·74	−0·65	−0·43	1·96	3·04	−1·15	−3·01	0·17
Alberni ..	6·29	−2·62	2·56	2·51	−1·90	1·27	−0·66	−0·97	3·99	10·34	1·79	−8·11	14·50
Clayoquot ..	6·96	−1·06	2·89	5·13	−3·74	−1·12	−0·96	−1·58	2·05	6·65	4·77	−8·95	10·74
Quatsino ..	5·59	−7·09	3·01		−1·99	−3·29	−2·32	−3·00	..	2·91	0·10	−12·16	...

N.B.—All quantities are plus unless otherwise designated

DIFFERENCE FROM AVERAGE TEMPERATURE, Vancouver Island District, 1914.

(Difference of Average for month from monthly average for previous ten years or more.)

Locality.	Jan	Feb	Mar.	Apr	May	June	July.	Aug	Sept.	Oct.	Nov	Dec	Year.
Victoria ...	2·0	1·9	2·9	1·6	2·4	−0·2	−1·2	−0·8	−3·0	1·2	−0·9	−3·2	2·7
Nanaimo ...	4·0	2·0	2·8	3·1	3·9	1·1	1·3	0·3	−2·4	2·3	0·4	−2·3	16·5
Alberni	2·4	−0·6	2·0	2·2	−0·4	−1·1	−1·6	1·9	−2·3	2·2	1·8	−2·8	3·7
Clayoquot	1·6	1·5	2·7	3·3	4·0	1·1	0·6	−0·6	1·4	2·3	0·4	−1·0	15·7
Quatsino...	−2·3	1·6	1·1		0·3	1·1	1·4	1·4	.	3·2	1·2	−4·5	......

N.B.—All quantities are plus unless otherwise designated.

REPORT

OF THE

BRITISH COLUMBIA HYDROGRAPHIC SURVEY FOR 1914

CHAPTER 3

Kamloops Division

REPORT OF E. M. DANN, B.A.Sc., D.L.S.

Division Engineer.

CHAPTER III.

THE KAMLOOPS DIVISION.

TERRITORY.

The Kamloops division covers practically the whole of the great interior plateau lying between the Hope range of mountains in the vicinity of Lytton, and the Gold range near Revelstoke on the main line of the Canadian Pacific railway. Speaking broadly, the territory is drained by the Thompson river with its north and south branches; the former heading in the vicinity of the Yellowhead pass, the latter in Shuswap lake and its surrounding hills.

In addition to the vast catchment area of the Thompson, in whose valley flow some of the most important and contentious sources of water supply throughout the whole of British Columbia, the Kamloops division also covers a small portion of the Columbia River basin lying north of the international boundary, and drained by the Kettle, Similkameen, and Okanagan rivers.

The total area of the Kamloops division is 33,000 square miles.

USES OF WATER.

IRRIGATION.

The principal industry carried on throughout this division is agriculture in all its varied forms. Owing to the semi-arid nature of most of the country the principal need of water is for irrigation, and any other use to which it may be put is directly or indirectly, connected with that science. The community which uses hydro-electric power, for example, depends for its existence upon agriculture, and this could not be carried on without irrigation. Further, without irrigation there would be little demand for water for domestic and municipal supply.

Thus it will be seen that in the Kamloops division the great natural resource, water, is used pre-eminently for irrigation.

WATER-POWER DEVELOPMENT.

Most of the power derived from falling water is developed outside the most arid section of the division, although, notably in the instance of the Kamloops municipal plant on the Barrier river, power is sometimes transmitted through irrigation areas. A discussion of the hydro-electric plants in the Kamloops division has been made in other reports, although a short description of each is appended hereto.

WATER-POWER POSSIBILITIES.

The greatest possibilities of water-power development within the division are many times more important than the development powers. It is doubtful if any stream in the province has as many splendid sites for future development as the Clearwater river and its principal tributary the Myrtle, a full description of which may be found in this report. (See "Hydrographic Data of Stream Flow," Clearwater and Myrtle rivers.) The power capacities of many other large streams are shown elsewhere in this report and in Water Resources Papers Nos. 1 and 8 published by the Dominion Water Power Branch.

There is, however, in the development by farmers and others, of power upon the smaller streams, a very great immediate future. The rational handling of irrigation water may enable a rancher to operate a small plant, producing sufficient power at a very low cost for his farm needs. Power to light house and barns, power for cooking purposes, power for wood-sawing and for a hundred and one necessities, lies at many a door, and is capable of very cheap and efficient development.

MUNICIPAL SUPPLY.

In every large centre of the province the intelligent selection of a source of municipal water supply is of vast importance. The supply must be pure, in the broad sense of that word, and regular. In this particular area, as in fact throughout the whole of British Columbia, little trouble arises from impurity of supply, and our mountain streams carry, generally speaking, a quality of water ideal for domestic use. The quantity therefore is that which is of particucular interest to the public at large, and throughout the division studies are being commenced of streams where a knowledge of the amount of water is of much importance in this relation.

TOPOGRAPHY OF THE KAMLOOPS DIVISION.

The wide valley of the Thompson is bordered on either side by bench lands and table-like plateaus at the lower elevations, through which the erosive effect of surface run-off has literally cut hundreds of deep gulches. The appearance of the surface soil in midsummer is barren and uninviting save where irrigation water has painted an oasis of verdant green. To get the best idea of the topography of the area of which Kamloops is the centre, and to realize to what extent it is in fact a plateau, one must view it from a mountain top. Mount Tod (7,000 feet) is the highest peak in this part of the division. From it one may see gentle sloping and park-like tablelands cut by small streams whose waters, shaded from the sun by a covering of willows, seek their way to the larger arteries of flow in the bottom valleys. To the west the mountains of the Hope range; to the east the Gold range—the wardens of the Selkirks—reach out to the sky, snow-capped; while between, stretches this splendid plateau like the deck of a vast suspension bridge hanging between mighty towers.

Of similar topography are the Okanagan and Kettle River valleys.

The Similkameen valley presents a marked contrast to the country just described. Here the hills rise steeply on either side of the river to a height of 5,000 and 6,000 feet above the sea. They are well covered with timber, particularly on their northern slopes and, except in the bottom lands where some irrigation is required, there is very little agriculture carried on.

PRECIPITATION AND CLIMATE.

Precipitation and climate are very closely related, and both are to a large extent dependent on topography. With increasing altitude we have lower temperature and higher precipitation. The remarkably small precipitation in the Kamloops division is due to the fact that there are no high mountains to cause condensation of the moisture laden winds from the Pacific.

Tables are to be seen elsewhere in this report showing the precipitation and temperatures for certain meteorological stations in the province for each month the variation from the average is also tabulated for those stations where records are available for a sufficiently long period to render these average figures of some value.

It is well to bear in mind while scanning these records, that in general these stations are located in centres of population which are as a rule at low altitudes. This means that for any considerable area the mean monthly precipitation is greater, and the mean monthly temperature less, than the figures given for the centre of population for that area.

The greater part of the Kamloops division lies within the dry belt, where the mean annual precipitation varies from a minimum of 5 inches per annum near Ashcroft to a maximum of probably 35 or 40 inches at the highest altitude in the section. Outside the dry belt, however, on some of the higher elevations of the clearwater drainage basin in the north, and the peaks of the Hope and Hagameen ranges which feed the Tulameen and South Similkameen rivers, the precipitation is thought to be over 50 inches, although no accurate records have been taken at these high points.

DISTRICTS AND STAFF.

For the purpose of organizing stream measurement work in a simple and systematic manner, the division has been split up into three arbitrary districts, the boundaries of which are largely determined by transportation routes. An assistant engineer is directly responsible for the maintenance of station equipment and of the acquirement of data on all streams of importance throughout the district.

KAMLOOPS DISTRICT.

The Kamloops district is such a large and important area, that in view of the establishment of many new stations on streams tributary to the North Thompson river it was found advisable to divide it into two sections with an assistant engineer in charge of each.

The section immediately around Kamloops was supervised by Mr. C. B. Corbould, B.A.Sc., Assistant Engineer, and included the many contentious irrigation streams in the vicinity of Kamloops, Grand Prairie and Mamit lake. The vast importance of irrigation interests in this country, and the thorough knowledge of stream flow necessary to intelligent development, warrants a much more complete investigation than, with the present assistance and funds available, it has been possible to give.

The suddenness of the freshet and its short duration, coupled with the fact that the peak occurs simultaneously on widely separated streams, renders the work exceedingly difficult in this section.

Work in the North Thompson section was supervised by Mr. E. H. Tredcroft, C.E., Assistant Engineer, and a desultory train service on the newly built Canadian Northern Pacific railway, rendered the streams more accessible than hitherto. Stations were established on the North Thompson river (above its confluence with the Clearwater), on Raft river, on Myrtle river and on Boulder, Whitewood, Fishtrap, and Little Clearwater creeks. In the early spring a cable station was built on the Clearwater river at Brookfield's ranch and hydrographic work was continued with good results.

Owing to its inaccessibility and the limited funds available, it was impracticable to rate the Myrtle river during 1914. Gauge readings were however commenced and a record of the flow during the latter part of 1914 will be developed when a rating curve is defined.

The importance of this district for the future production of water-power is very great, the wonderful Helmcken falls on the Myrtle river being the most important of many power sites in the Clearwater country. At this point the Myrtle river plunges headlong over a sheer cliff, 450 feet in height, to a rocky canyon below, presenting a sight which will classify the Helmcken falls among the scenic beauties of the world. Its distance from the Canadian Northern Pacific main line at Mile 71, north of Kamloops, is about 40 miles. At present the only means of access is by pack trail (see photographs, and description of Myrtle river under "hydrographic data of stream flow").

THE ASHCROFT AND NICOLA DISTRICT.

The streams in the vicinity of Ashcroft are of inestimable importance, owing to the extreme aridity of the climate and the consequent higher "duty" of irrigation water. Hydrographic work was carried on throughout this section with Mr. Corbould as assistant engineer.

In the Nicola valley, Mr. K. G. Chisholm, B.Sc., Assistant Engineer, was in charge of field work. New stations were established on Spius creek and the Coldwater river, both of which are capable of power development.

THE OKANAGAN DISTRICT.

Acquisition of field data on streams of the southern Okanagan, of the Kettle valley, and of the Similkameen country was in the hands of Mr. Chisholm, and field work was vigorously carried on. Stations were established on the more important streams and in nearly all cases first-class rating curves were defined during the season. This section is of particular interest on account of the fact that its larger waterways are of an international character, the Kettle river, for example, crossing the United States boundary line three times.

In the Shuswap lake section, the tributary streams are only accessible by motor boat. It was possible to make but two trips around this section, so that very limited information is available about the outlying streams; gauge readings are being taken regularly, however, and records of flow will be published at a later date on such streams as Seymour river, which has latent power possibilities.

On the Adams river, another power stream of importance, an automatic, self-recording gauge was installed in October, 1914, by Mr. Tredcroft, and has given good service, no trouble from ice conditions having been encountered. Owing to the artificial regulation of the flow of this stream at Adams lake, by the Adams River Lumber Co., and the sluicing operations which the company has carried on, the fluctuation in stage was erratic, and it was found impracticable to secure precise results through the services of a gauge reader.

KAMLOOPS OFFICE.

Suitable office accommodation was procured in the Acadia block, Kamloops, where compilation, checking and plotting of field work is carried on. Unpublished data for the year are gladly compiled and made available for the public at any time. The division engineer visited and inspected most of the field stations in each district throughout the year, and kept constantly in touch with all gauge readers, supervising office work and assisting in the checking of field data. Miss B. B. Allan, as stenographer and office clerk, had charge of all filing, indexing, and gauge readers' returns.

INSPECTIONS.

In addition to actual stream flow work, all irrigation projects, involving Dominion Lands, within the Railway Belt of British Columbia, were inspected in co-operation with the Dominion Lands agent, by the division engineer at Kamloops. The construction of irrigation works in connection with such applications was supervised, and several surveys carried out in the field for the purpose of defining land covered by storage works and served by irrigation ditches.

Dam, Barriere River Development, City of Kamloops.

Exterior Barriere Hydro-Electric Power House—Municipal plant for City of Kamloops, British Columbia.

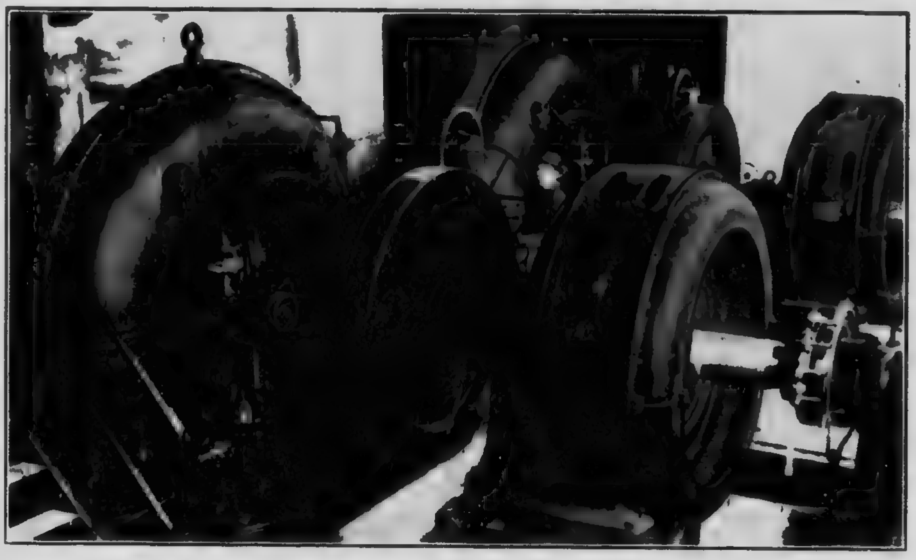
Photograph by courtesy of Messrs. Ducane, Dutcher & Co., Consulting Engineers, Vancouver.

A timber flume (8' x 4') some three and a half miles long gives a concentrated head of 190 feet on the turbines. There are two penstocks of wood stave construction. The power house is of concrete.

DEVELOPED WATER-POWERS.

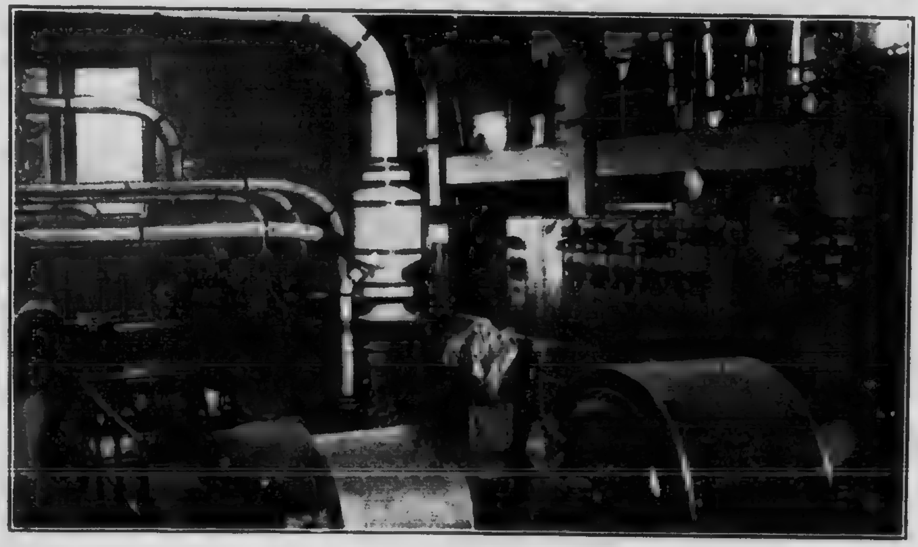
BARRIERE RIVER.

A 2,200 horse-power development has just been completed on the Barriere river, some 40 miles north of that city, by the municipality of Kamloops, with



Interior Barriere River Hydro-Electric Power House, Municipal plant for City of Kamloops. Photograph by courtesy of Messrs. Ducane, Dutcher & Co., Consulting Engineers, Vancouver.

The present development has two 1,100 H. P. Platt Iron Works Victor-Francis turbines operating under 190′ head, with 750 K.V.A. Canadian Westinghouse Co. 2,200 volts, 3 phase 60 cycle generators (600 R.P.M.) with direct connected 40 K. W. Exciter.



Interior Sub-Station, City of Kamloops.

Messrs. Ducane, Dutcher & Co., of Vancouver as engineers. A timber flume 3½ miles long gives a concentrated head of 190 feet on the turbine, of which there are two of the Victor-Francis type. The penstocks are of wood stave, and are buried. The power-house is of concrete, and the plant itself is of exceptionally compact design.

An unfortunate landslide, such as British Columbian engineers are often called upon to deal with, has, at the time of writing, caused the plant to be temporarily shut down, a portion of the flume having settled with the slide. This matter is being adjusted and it is hoped the development will shortly be in operation again.

An auxiliary steam plant at Kamloops looks after the demand for power, during the winter period, when it is expected that the hydro-electric plant will be shut down for a period of six weeks to two months.

BOUNDARY CREEK.

There is a small hydro-electric development at Boundary falls, by which the city of Greenwood derives light and power. The plant operates under a head of 130 feet and has a capacity of 250 horse-power.

CRAZY CREEK.

At Taft, B.C., the Forest Mills of British Columbia, Ltd., has a small Pelton wheel development of 150 horse-power. Water is diverted through a 7-inch wood stave pipeline and operates under a head of about 150 feet. The power is used in connection with the sawmill as well as for fire protection, lighting, and domestic purposes.

FORTUNE OR DAVIS CREEK.

Near the city of Armstrong, B.C., on Fortune (or Davis) creek there is a small Pelton wheel development of about 200 horse-power, municipally owned, and used for lighting and power purposes. It operates under a head of 500 feet, water being carried from the storage reservoir by a pipeline, a distance of three-quarters of a mile to the power house. A transmission line carries power at 2,200 volts to the city of Armstrong.

KETTLE RIVER AT CASCADE.

The West Kootenay Power and Light Co., operates a plant on the Kettle river with a capacity of 3,900 horse-power under a head of 155 feet which is maintained in conjunction with the plants at Bonnington falls on the Kootenay river. Power is used at Grand Forks, Phoenix, and Nelson for lighting, and for the mines and smelters.

KETTLE RIVER (NORTH FORK).

A 700 horse-power plant operating under a 30-foot head is maintained and used by the Granby smelter near Grand Forks.

MURRAY CREEK.

A Pelton wheel development of 100 horse-power operating under a 220-foot head delivers light and power to the town of Spences Bridge. Water is taken to wheel direct from Murray creek in a 16-inch riveted steel pipe, the upper 175 feet of pipe being laid through a rock tunnel.

NAKALLISTON CREEK.

The Mount Olie Light and Power Plant develops some 30 horse-power from Nakalliston creek for the use of that settlement, which is about 50 miles north of Kamloops, B.C. Six hundred feet of 16-inch wood stave pipeline carries water to a small turbine acting under a 50-foot head.

SIMILKAMEEN RIVER.

The Daly Reduction Co., which owns and operates the well-known Nickel Plate Gold Mine at Hedley, B.C., has during 1914, completed the construction of a hydro-electric plant with a capacity of 1,800 horse-power. By means of a dam and a 3-mile wooden flume, a head of 67 feet is obtained. This installation superseded a plant on Twenty-mile creek, which proved of little service during low-water periods, and in conjunction with which an auxiliary steam plant had to be used

TOTAL Monthly Precipitation, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Kamloops	1·68	2·18	0·26	0·38	1·31	0·54	0·53	0·38	1·09	0·79	1·01	0·58	10·73
Monte creek	0·84	2·08	....	0·15	0·60	1·09	0·98	0·28	1·20	0·76	1·00	0·78	......
Salmon Arm	3·08	1·36	0·87	1·27	1·36	1·34	0·73	0·19	2·17	1·54	3·02	1·55	18·48
Vernon	1·25	1·22	0·51	0·42	1·07	1·05	0·62	0·53	1·96	1·18	1·46	1·15	12·42
Keremeos	2·20	0·66	0·72	1·05	0·50	1·31	0·49	0·20	1·31	0·73	1·21	0·65	11·03
Kelowna	2·34	2·98	0·30	0·20	0·87	1·07	0·20	0·26	2·65	0·70	1·43	0·48	13·48
Penticton	2·13	0·49	0·46	1·26	1·22	1·24	0·35	0·31	2·16	0·81	1·25	0·76	12·44
Princeton	2·36	1·16	0·73	0·65	1·32	0·88	0·21	0·12	1·39	1·00	2·04	0·96	12·82

MEAN Monthly Temperature, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Kamloops	29·8	25·2	39·9	51·6	58·0	63·9	70·9	68·7	56·5	49·9	37·7	21·5	......
Monte creek	32·1	23·8	......	49·0	51·9	62·2	69·0	60·0	52·8	47·1	35·8	18·8	......
Salmon Arm	30·2	26·2	37·9	48·7	55·1	61·4	67·0	64·8	54·0	47·5	37·2	23·2	......
Vernon	29·4	25·0	38·3	49·1	55·5	61·2	68·6	67·1	55·1	46·8	36·5	21·3	......
Keremeos	31·8	28·3	41·7	52·1	59·0	61·5	71·3	70·0	56·5	49·4	38·1	20·2	......
Kelowna	30·8	27·2	39·4	48·8	55·1	62·6	68·6	63·7	54·1	48·2	39·5	26·0	......
Penticton	34·3	30·4	41·0	50·3	56·4	62·2	69·5	67·8	56·2	49·8	40·3	26·1	......
Princeton	24·5	23·9	35·5	46·8	52·6	56·9	64·6	62·1	51·4	45·5	33·6	15·6	......

DIFFERENCE from Average Precipitation, 1914.

(Difference of Total for month from Monthly Average for previous ten years or more.)

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Kamloops	0·73	1·37	−0·06	0·00	0·28	−0·74	−0·73	−0·65	0·10	0·26	−0·11	−0·97	−0·56
Salmon Arm	0·44	0·02	0·25	0·43	0·03	−0·52	.....	−0·79	0·46	0·07	....	−0·56	......
Vernon	0·09	1·10	−0·15	−0·06	−0·21	−0·60	−0·68	−0·83	0·58	0·39	−0·03	−0·12	−0·54
Kelowna	0·88	1·76	−0·29	−0·98	−0·21	−0·33	−0·86	−0·77	1·48	−0·15	0·56	−0·90	−0·93
Princeton	1·06	0·16	0·[illegible]3	0·11	−0·02	−0·17	−0·89	−0·82	0·34	0·17	0·17	−0·28	−0·15

N.B.—All quantities are plus unless otherwise designated.

DIFFERENCE from Average Temperature, 1914.

(Difference of Average for month from Monthly Average for previous ten years or more.)

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Kamloops	5·1	−2·6	2·2	1·7	−0·4	0·1	1·2	0·6	1·9	1·4	2·7	−7·3	6·6
Salmon Arm	11·4	0·4	2·9	3·0	−2·3	1·7	.....	1·3	−1·9	4·2	......	−5·9	......
Vernon	7·8	−0·8	2·9	2·5	1·0	0·8	2·3	2·0	0·1	1·5	2·5	−6·5	16·1
Kelowna	5·2	1·5	2·7	2·1	−0·3	3·1	2·1	0·0	−0·7	3·4	3·1	−4·3	17·9
Princeton	7·7	0·7	2·9	2·6	0·7	0·3	1·7	0·8	−1·7	2·1	2·6	−6·7	13·7

N.B.—All quantities are plus unless otherwise designated.

REPORT

OF THE

BRITISH COLUMBIA HYDROGRAPHIC SURVEY FOR 1914

CHAPTER 4

Nelson Division

REPORT OF C. E. RICHARDSON, B.A.Sc., D.L.S.
Division Engineer.

CHAPTER IV.

NELSON DIVISION.

GENERAL REMARKS.

Mr. J. C. Hoyt, M. Am. Soc., C.E., Hydraulic Engineer in charge Division of Surface Waters, United States Geological Survey, and Mr. N. C. Grover, Chief Engineer United States Geological Survey, in their book on "River Discharge", makes the following statement:—

> The hydraulic engineer is interested in water from the time it reaches the earth in the form of rain or snow until it returns again to the atmosphere in the form of an invisible vapour.

The magnitude of this statement reveals the immense amount of data that the hydraulic engineer must collect in an endeavour to determine the most economical method of procedure with his work. The statement that each stream is a law unto itself is particularly true in the Nelson Division.

NELSON DIVISION.

The Nelson division comprises that part of British Columbia known as East and West Kootenay districts. The whole division is drained by Columbia river, and with the exception of Okanagan and Kettle rivers, comprises the total drainage of the Columbia in Canada. The East and West Kootenays are divided by Selkirk range of the Rockies, and the Selkirks are encompassed on the north, south, east, and west by Columbia river and one of its tributaries, the Kootenay. The Columbia rises in Columbia and Windermere lakes, 90 miles south of the C.P.R. main line at Golden, and flows in a northwesterly direction for about 200 miles to the mouth of Canoe river at Big Bend. From Canoe river the Columbia flows practically south for about 250 miles, past Revelstoke, through Arrow lakes, crossing the international boundary near Waneta, B.C. Kootenay river rises in Beaverfoot range of the Rockies, about 20 miles south of the C.P.R. main line at Palliser, B.C., and flows practically south for 175 miles, passing within 1 mile of Columbia lake, and crossing the international boundary near Newgate, B.C. It flows through Montana into Idaho, U.S.A., reentering British Columbia (West Kootenay district), 60 miles west of Newgate and 20 miles south of Kootenay Landing, at which point it loses itself in Kootenay lake. From the west arm of Kootenay lake the river flows in a southwesterly direction, discharging in Columbia river near Castlegar, about 20 miles north of the international boundary.

The total area of the Nelson Division (East and West Kootenay), is approximately 29,000 square miles. Of this some 15,000 square miles are drained by the Columbia river above the mouth of the Kootenay. The Kootenay river drains approximately 13,000 square miles in British Columbia. The remaining 1,000 square miles are drained by Pend d'Oreille river, of which Flathead river in southeast Kootenay is a tributary; the Pend d'Oreille discharges into Columbia river near Waneta, 200 yards above the International boundary.

CLIMATIC CONDITIONS.

Run-off is relative directly to topography and climatic conditions. Climatic conditions are themselves partially dependent on topography. In the study of stream flow it is essential to be familiar with these two factors. The topography, however, remains a constant factor, and the variation in the flow of streams is due directly to climatic conditions. In the opening paragraphs of the report the following remark was made:—"The statement that each stream is a law unto itself is particularly true in the Kootenays." This statement is based on the fact that in the Kootenays there is a greater variation in climatic conditions, even within a radius of a very few miles. It is impossible, therefore, to describe the climatic conditions in a general way and consider them for any one locality. Although there is no direct relation between the various localities, there are marked variations between some of the districts. The following tables and remarks are intended to show these striking variations, and in comparison with them a general resemblance may be seen between other districts.

The attached tables of precipitation for various points in the Kootenays are compiled from the monthly reports for 1914 of the Meteorological Survey, Mr. R. F. Stupart director. One table shows the monthly precipitation, while the other shows the difference from the average for the past ten years or more.

In these tables a comparison is shown between ten points, five in East Kootenay and five in West Kootenay, for 1914. Of these ten points, eight are in the valleys of the Columbia and Kootenay rivers. Glacier in West Kootenay and Fernie in East Kootenay are near the summits of the Selkirks and Rockies, respectively. Although marked variations may be noted in this table, it also shows conclusively that the precipitation in West Kootenay is much greater than in East Kootenay.

The cause of the variation in precipitation at these points may be partially explained as follows:—

Practically all the precipitation which falls in the Kootenays comes from the west. The moisture laden clouds coming from the Pacific first hit the heavily-timbered Coast range. The result is that on the west slope of the Coast range the precipitation is very heavy. These clouds then pass over the rolling hills in the central division of Yale district. The precipitation there is so light that the country is semi-arid. Gold range is only high enough to reach the lower clouds, and the precipitation on the west slope of Gold range is not very heavy though considerably greater than around Kamloops. After the Gold range comes the Selkirks. The Selkirks, particularly in the north half of the Kootenays, are high and heavily timbered. They reach well into the moisture laden clouds and the result is a heavy precipitation on the west slope or in West Kootenay. The lower clouds have been precipitated by the Selkirks, and hence when the Rockies are reached by the remaining clouds a smaller per cent will be affected. Thus the precipitation in East Kootenay will be less. This is correct for the northern part of the Kootenays. In the south, however, the Rockies are higher than the Selkirks, and around Fernie the precipitation is very heavy. To offset this, the Valley of the Kootenay in this vicinity is wide, and around Cranbrook the precipitation is very light.

A comparison of East and West Kootenay has just been made. It might be interesting to compare the precipitation in the Kootenays along the Columbia and Kootenay valleys from south to north. In East Kootenay from Elko to the Windermere country, the precipitation is about the same. Proceeding north from Windermere (Wilmer on table), the precipitation in the Columbia valley increases slightly to Spillimacheen. From there to Golden it is fairly constant. From Golden north the precipitation gradually increases till within a few miles of the Big Bend. Captain Armstrong, a member of the Public Works Department (Canada) at Nelson, and a man well informed on the Kootenays, made the following statement:—

PRECIPITATION.

> It was early in May, 1894. Proceeding north from Golden the snow became gradually deeper. At Kimbasket lake it was about 4 feet deep and well packed. Past Kimbasket lake the depth of snow still increased, till we came to a point immediately below the mouth of Wood river. Within a distance of a quarter of a mile there was a pronounced change, from 8 feet of snow to green grass. The lower valley of Canoe river appeared very dry. Jack pine was present.

Captain Armstrong accounted for this change by the fact that the Selkirks had practically disappeared, and the mountains to the east, west, and north were not high, and the moisture-laden clouds were not penetrated until about Wood river. It is possible, however, that this sudden change might have been produced by Chinook winds.

CHINOOK WINDS.

Captain Armstrong also gave a very interesting description of the Chinook winds in East Kootenay. They come from the south, up Kootenay valley, and touch Tobacco plains near Newgate at the international boundary. From Tobacco plains they appear to rise and are not apparent again till in the vicinity of Columbia lake, the source of Columbia river. Their effect is noticed very much around Windermere lake and at the mouth of Toby creek. In January, 1901, in the valley around Windermere lake the thermometer reached 65° F., and the snow all disappeared. Toby creek valley was affected till an altitude of about 5,000 feet was reached, the height of the Chinook clouds. Above 5,000 feet there was not any effect from the Chinook. When the temperature in the valley was as high as 65° F. at the Paradise mine on Toby creek, 8,000 feet altitude, the thermometer ranged from $-20°$ F. to $-26°$ F. day and night. North of Toby creek the Chinook appears to lift or die out, and is not again very evident.

In West Kootenay the precipitation seems rather similar in the valley at most points as far north as Nakusp. Farther north, however, it increases considerably.

SNOWFALL DATA ALONG THE C.P.R. IN SELKIRK RANGE.

The C.P.R. have kept snowfall records each year since 1887 at various points along the main line in the Selkirks. The following table is taken from these records. and shows the annual snowfall in feet and inches. The location of the points at which records were taken is denoted by the number of miles and direction from Roger pass, the summit of the Selkirks

SNOWFALL TABLE.

Date.	Revelstoke 35 M. SW.	Laurie tunnel 12 S.W.	Cambie 3½ S.W.	Glacier 2½ S.	22 Shed 2½ S.	18 Shed 1½ S.	14 Shed 1 N.E.	Cv. band.
	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.
1888-9						28 0		14 8
1889-90						33 3		20 9
1890-91								17 6
1891-92						36 3		21 0
1892-93						38 10		23 11
1893-94				43 4				23 9
1894-95				28 11				16 4
1895-96								27 8
1896-97				34 11				
1897-98				27 6				
1898-99				43 2				18 11
1899-1900				26 9				18 10
1900-01				32 1		34 11		17 10
1901-02				28 6		35 3		19 3
1902-03				32 0		28 9		22 11
1903-04				31 11		46 8		24 1
1904-05				16 7		17 0		17 0
1905-06	4 9			15 4		15 5		13 10
1906-07	11 2			39 8		28 7		18 10
1907-08	8 4	24 4		37 11	26 6	31 8		20 5
1908-09	12 9			34 0	29 10	30 11		23 5
1909-10	11 5	25 2		36 9	32 1	32 2		29 5
1910-11	15 8	24 7		40 7	36 8	39 2		21 7
1911-12	11 2	21 2		32 7	33 2	32 5		18 9
1912-13	15 10	27 1	41 5	45 1	47 2	44 11	37 4	23 8
1913-14	11 7	21 6	33 0	35 0		35 11		23 10

TEMPERATURE.

The attached tables show the average monthly temperature for the same localities for which the precipitation tables were compiled. The variation from the average for the past ten years for each month is also shown.

It may be seen from this table, that in the valleys, the temperature in East Kootenay is lower than in West Kootenay. There is no doubt that variation in elevation has a great deal to do with variation in temperature. It has been stated on good authority that at high elevations, such as 7,000 or 8,000 feet in the Rockies near Golden, there is much less variation in temperature than there is at Golden (2,500). During cold spells at Golden the temperature will be lower than at a point 4,500 or 5,500 feet above. At other times the temperature is lower for the higher elevation. Insufficient study has been carried on to go more deeply into this interesting problem.

CO-OPERATION.

Before the advent of the British Columbia Hydrographic Survey in the Kootenays considerable amount of work had been done by the Railway Belt Hydrographic Survey in the Railway Belt; and by the Provincial Water Rights Branch in other parts of the division.

The Provincial Water Rights Branch has three district engineers in the Nelson division. Mr. H. B. Hicks in Cranbrook district, Mr. W. J. E. Biker in Nelson district, and Mr. O. J. Bergoust in Revelstoke district. These engineers have given their earnest co-operation in obtaining data on many streams in this division.

HYDROGRAPHIC DISTRICTS.

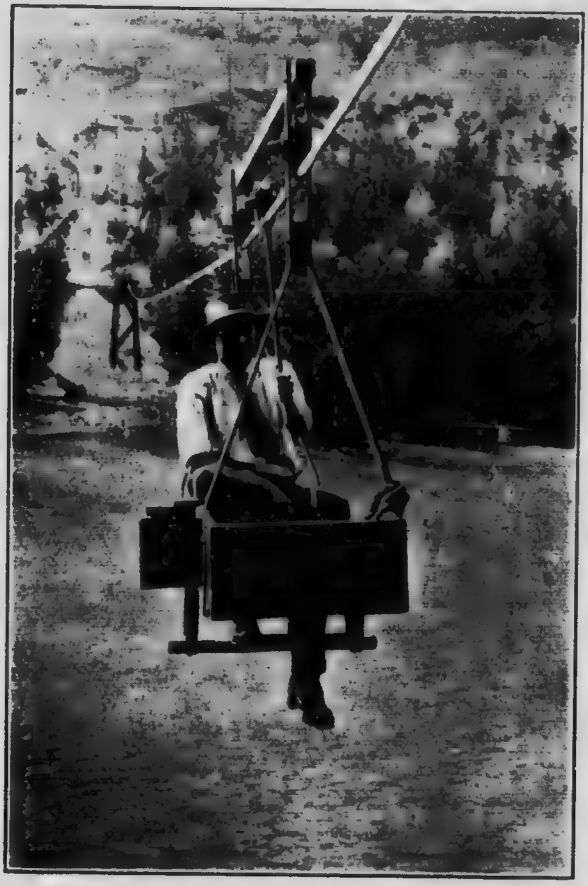
At the opening of the 1914 season (April) the staff of the Nelson division consisted of a division engineer, two assistant engineers, and an office assistant. The division was divided into three districts, Mr. Gill was put in charge of the

Cranbrook district, Mr. Elliott in charge of the Revelstoke district, while Mr. Beeston and the division engineer both attended to the Nelson district. Many new stations were established during the spring and early summer. Owing to the loss of one of the staff in August the work was considerably curtailed for the rest of the year, with the result that it was impossible to obtain discharge curves for all the streams in the division. Another year's work, however, will make it possible to rate all these stations.

PROBLEM OF TRANSPORTATION.

Owing to the size of the Nelson division and the varying nature of the country, the problem of transportation is of vital importance. The streams in the vicinity of Nelson are reached, for the most part, by boat. In the Upper Columbia valley and Cranbrook districts, many of the streams are remote from the railroads; to cover these districts horses are of little use on account of the great distance to be covered in a trip, but by using an automobile of its own, this survey could greatly reduce the cost of the work in these two districts.

Cranbrook District (II)—Photograph showing support for cable way and platform attachment for cable car.



Cranbrook District (III).—Photograph showing cable car and method of operating.

WINTER MEASUREMENTS.

Winter measurements are absolutely essential on the majority of streams in the Nelson division. In East and North-west Kootenay the streams are frozen or affected by ice from November or December to March or April. In South-west Kootenay the streams seldom freeze over for more than a week or so at a time, and in the larger rivers ice conditions do not exist except during extremely cold spells.

There are two periods of low water in this division in the late summer or early fall, and during the winter. On all glacial fed streams and on a great many others low water occurs during the winter and renders winter measurements necessary.

It is not intended here to enter into a discussion on stream gauging under ice conditions, but, should any one be interested in this work, reference is made to United States Water Supply Paper No. 337, by Mr. W. G. Hoyt. In this paper the most advanced methods and theories are discussed.

It is a much more difficult matter to obtain reliable measurements under ice conditions than during the open season, for the following reasons:—

(1.) *The Personal Equation.*—Particularly during very cold weather it is a most uncomfortable undertaking. The engineer should be supplied with the warmest clothing outfit, such as shoepacks, etc., and several pairs of gloves.

(2) *Frazil Ice.*—In the Kootenays when ice conditions exist, frazil ice is generally present. The best metering sections are always above a riffle, and these sections or parts of them are always packed with frazil ice. It is a hard proposition to determine if there is any water flowing through the ice and also the width of the channel free from this packed frazil ice. Again, when this ice is flowing downstream it is liable to affect the action of the meter.

(3) *Meter.*—During cold weather the meter is very liable to freeze when it is out of the water.

Needless to say, the cost of winter measurements is much in excess of the open season work. Transportation is more difficult, ice has to be chopped and the measurement takes much longer.

Not many winter measurements were made in 1914. Mr. Webb covered the streams in Revelstoke district in February. In Nelson district streams on which regular gauging stations were established were all metered at various times throughout the winter. The larger of these streams, such as the Kootenay Pend d'Oreille, Columbia, and Slocan, did not freeze, so the open season curve was applicable for the whole year. In December, Messrs. Elliott and Corbould metered the power streams in Cranbrook district during a cold spell. All measurements were made in cold weather from 0°F to –20°F. Frazil ice was flowing in practically all the streams they metered and caused much trouble. The results, however, should be fairly reliable and are of value. It is an established fact that the run-off during the winter months varies with the temperature. In most years the low flow in the Kootenays occurs in February or March and, it is believed, takes place shortly after the last cold spell of the season. Particular attention will be paid to winter measurements during the latter part of February and early March in 1915.

TOTAL Monthly Precipitation, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Golden	3·65	0·20	1·37	0·75	1·10	1·09	0·42	0·45	1·73	1·35	1·67	0·75	14·53
Wilmer	2·18	0·45	0·44	1·30	1·32	1·51	1·96	0·82	2·54	0·88	1·23	0·53	15·69
Glacier	10·45	4·95	9·00	4·25	2·93	3·37	1·86	0·88	3·33	2·55	9·10	3·55	56·22
Revelstoke	9·89	2·06	3·23	2·42	1·25	2·53	0·97	1·19	3·87	2·23	7·09	1·65	38·38
Nakusp	5·24	1·54	0·96	3·07	1·65	2·43	1·57	0·93	2·90	1·98	3·31	1·58	27·16
Nelson	6·10	1·00	1·58	3·07	1·95	2·56	1·05	0·24	3·44	1·85	4·03	0·70	27·57
Waneta	5·01	1·20	2·36	2·33	2·87	3·36	1·36	0·00	3·93	1·33	2·99	1·43	28·17
Cranbrook	3·63	0·15	....	0·79	1·06	2·02	0·97	0·44	1·27	1·57	2·47	0·80	......
Elko	1·91	0·50	1·06	1·48	2·01	2·71	0·90	1·62	1·39	2·45	2·08	0·80	18·94
Fernie	10·94	1·23	2·93	2·66	1·64	1·38	1·45	2·15	4·77	4·47	7·09	0·81	42·52

MEAN Monthly Temperature, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Golden	20·5	20·1	30·8	44·4	50·8	56·7	63·4	59·5	50·5	43·4	30·3	8·4	39·9
Wilmer	22·6	20·4	32·0	43·6	50·9	55·6	64·4	61·1	50·8	41·4	30·9	11·4	40·5
Glacier	20·5	18·6	26·3	36·4	43·8	51·1	57·5	55·7	45·0	40·0	27·5	11·0	36·1
Revelstoke	[illegible]·8	24·8	32·9	44·9	53·5	58·6	65·1	62·4	52·7	45·2	35·4	18·8	42·5
Nakusp	[illegible]·9	26·7	35·0	45·3	52·5	55·1	64·0	61·2	50·5	44·5	36·3	22·3	44·0
Nelson	30·0	28·3	39·1	48·5	55·0	59·5	68·8	66·6	53·1	46·1	37·5	23·6	46·4
Waneta	29·0	25·1	37·3	47·1	53·5	58·0	67·8	66·6	52·1	45·4	35·4	18·5	44·7
Cranbrook	25·9	19·6		46·0	52·4	57·5	64·5	61·5	51·9	43·4	34·5	10·4	......
Elko	30·7	24·3	37·4	50·4	53·8	59·3	69·1	67·3	54·8	45·8	37·1	14·9	45·4
Fernie	25·7	18·6	31·4	42·7	49·8	54·3	62 9	59·7	46·1	42·1	33·4	11·8	40·2

DIFFERENCE from Average Precipitation, 1914

(Difference of Total for month from monthly Average for previous ten years or more.)

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug	Sept	Oct.	Nov.	Dec.	Year.
Golden	−2·36	−0·68	0·48	0·19	0·21	−0·55	−0·95	−1·18	0·06	−1·12	−1·00	−0·78	−7·14
Glacier	1·60	−2·76	1·20	1·31	1·15	0·58	−0·53	−1·49	−0·81	−1·37	0·00	−4·52	−5·34
Revelstoke	4·35	−2·62	0·50	0·47	−0·97	−0·56	−1·62	−1·21	0·51	−1·88	1·40	−2·91	−6·54
Nelson	3·48	6·86	−0·06	1·65	−0·21	−0·23	−1·87	−1·70	1·62	−0·45	0·52	−1·84	0·06
Elko	1·31	−0·65	−0·02	0·52	−0·25	0·15	−0·65	0·28	0·06	1·46	0·11	−0·45	0·86

N.B.—All quantities are plus unless otherwise designated.

DIFFERENCE from Average Temperature, 1914.

(Difference of Average for month from Monthly Average for previous ten years or more.)

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Golden	11·8	1·2	1·3	2·8	−0·8	−0·3	2·1	1·3	0·8	3·0	1·9	−10·5	14·6
Glacier	2·0	0·6	0·8	0·9	−0·9	−0·1	0·5	1·2	−1·1	4·8	1·8	−7·[illegible]	3·0
Revelstoke	7·3	2·1	1·0	1·7	1·5	0·2	2·1	1·1	0·2	2·2	1·1	−8·1	12·0
Nelson	−5·7	−0·4	2·1	1·5	1·3	−2·2	2·2	5·7	−2·9	1·1	0·9	−6·9	−3·3
Elko	8·1	−1·8	3·0	5·0	0·9	−0·7	2·6	4·0	4·6	2·8	1·3	−13·6	16·2

N.B.—All quantities are plus unless otherwise designated.

REPORT

OF THE

BRITISH COLUMBIA HYDROGRAPHIC SURVEY FOR 1914

CHAPTER 5

Coast Division—Hydrographic Data

CHAPTER V.

COAST DIVISION—HYDROGRAPHIC DATA.

REGULAR METERING STATION.

BELKNAP CREEK AT BELKNAP LAKE (1000).

Location.—Just at lower end of Belknap lake in section 36, township 6, range 7, west of 7th meridian.

Records Available.—Measurements were started in October, 1912, and have been more or less continuous ever since.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge.

Channel.—Bed of stream strewn with rocks and boulders, giving uneven bottom, but permanent control.

Discharge Measurements.—Nine meter measurements made during 1912, 1913, and 1914 define the rating curve very well except for extreme low and extreme high water.

Winter Flow.—Very heavy snowfall but very little ice, so that open-water conditions obtain practically all winter.

Accuracy.—D. Poor because the gauge readings were not taken very frequently.

Co-operation.—Gauge readings are made by employees of the Westminster Power Company.

DISCHARGE MEASUREMENTS of Belknap Creek, Belknap Lake, 1912-1913-1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft	Ft. per sec.	Feet.	Sec.-ft.
1912.							
Oct. 21	C. G. Cline	1,046	33	51	0·7	1·60	34
1913.							
June 4	H. C. Hughes	1,673	35	101	2·7	3·20	257
" 11	do	1,673	34	85	1·8	2·70	148
" 25	do	1,673	34	88	1·8	2·65	147
July 22	do	1,673	36	106	2·0	2·92	202
" 31	do	1,673	35	74	1·0	2·02	75
Sept 22	F. MacLachlan	1,673	35	50	0·8	1·55	41
1914.							
Aug. 1	C. G. Cline	1,933	33	66	0·8	1·72	50
Nov 15	H. C. Hughes	1,933	35	71	0·5	1·50	34

DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek at Belknap Lake for 1914.

Day.	February.		March.		April.		May.		June.		July.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	....	9	....	23	....	20	....	81	....	109	....	170
2	0·8	9	....	26	....	27	....	84	....	112	2·85	183
3	....	9	....	28	....	33	....	86	....	116	....	165
4	....	9	1·45	30	....	42	....	89	2·45	120	....	147
5	....	9	....	33	....	49	....	91	....	100	....	129
6	....	9	....	36	1·8	57	2·2	93	2·1	83	....	111
7	....	10	....	39	....	58	....	101	....	83	2·2	93
8	....	10	....	40	....	59	....	109	....	83	....	93
9	....	10	....	42	....	60	....	117	....	83	2·2	93
10	....	10	....	44	....	61	....	125	....	83	....	102
11	....	10	....	45	....	62	....	133	2·1	83	....	111
12	....	10	....	47	....	63	....	141	....	93	....	119
13	....	11	....	49	....	64	....	149	....	105	....	127
14	....	11	....	51	....	65	....	157	....	117	....	116
15	....	11	....	53	....	66	....	165	....	129	....	105
16	....	11	....	55	....	67	....	173	2·6	141	2·2	93
17	....	11	....	57	....	68	....	181	....	134	....	99
18	1·0	11	....	59	....	69	....	189	2·5	127	2·32	105
19	....	11	1·85	61	....	70	....	197	....	126	....	97
20	....	12	....	56	....	71	....	205	....	125	....	89
21	....	13	....	51	....	73	....	213	....	124	....	81
22	....	14	....	46	2·0	74	2·05	222	....	123	....	73
23	....	15	....	41	....	74	....	207	....	122	....	65
24	....	15	....	40	....	75	....	192	....	121	2·8	57
25	....	16	....	37	....	75	....	177	....	120	1·83	60
26	....	17	....	33	....	76	....	162	....	119	....	60
27	....	19	....	29	....	77	....	147	....	117	1·86	61
28	....	20	....	22	....	77	....	132	....	115	....	55
29	....	....	....	18	....	78	....	117	2·4	114	....	52
30	....	....	....	15	2·05	79	2·3	103	2·7	156	1·7	49
31	....	....	1·05	12	....	....	....	106	....	....	1·7	49

DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek at Belknap Lake for 1914.

DAY.	August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·72	50	1·36	20	......	70	......	300	......	50
2	......	50	......	22	......	60	3·90	410	1·65	45
3	......	50	......	25	1·75	53	......	400	......	40
4	......	50	......	27	......	50	......	300	1·45	30
5	......	50	......	30	......	45	......	200	......	30
6	......	50	......	[illegible]	......	40	......	150	......	25
7	1·75	53	......	[illegible]	......	35	......	150	......	20
8	......	50	1·55	37	......	30	2·65	150	......	15
9	......	45	1·65	45	......	25	......	100	1·0	11
10	1·60	41	......	50	1·30	22	......	90	......	11
11	......	45	......	50	......	30	......	80	......	11
12	1·70	49	......	50	......	40	1·85	60	......	11
13	1·70	49	......	50	......	50	......	50	......	10
14	......	49	......	100	......	100	......	40	......	10
15	1·70	49	......	200	......	200	1·50	33	......	10
16	......	45	......	500	......	400	......	35	......	10
17	......	40	......	600	......	500	......	40	......	10
18	1·46	30	5·00	630	4·80	580	......	40	......	10
19	......	30	......	500	......	500	......	45	......	10
20	1·44	29	3·40	300	......	400	......	45	......	10
21	......	29	......	250	......	200	1·70	49	......	10
22	1·44	29	......	200	......	100	......	80	......	10
23	......	29	......	150	......	70	2·40	115	......	10
24	......	25	......	120	1·80	57	......	120	......	10
25	1·35	25	......	120	......	55	......	140	......	10
26	......	25	......	120	......	50	......	150	......	9
27	......	24	......	115	......	50	2·70	155	......	9
28	......	23	2·40	115	1·70	49	......	150	......	9
29	1·31	22	......	100	......	50	......	120	0·8	9
30	......	21	......	90	......	100	......	100	......	10
31	......	21	......	......	......	200	......	......	1·1	13

MONTHLY DISCHARGE of Belknap Creek at Belknap Lake for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.			Accuracy.
	Maximum.	Minimum.	Mean.	
February	......	......	12	D
March	......	......	39	D
April	79	20	63	D
May	222	81	143	D
June	156	83	113	C
July	183	49	97	C
August	53	21	38	C
September	630	20	159	D
October	580	22	136	D
November	410	33	130	D
December	50	9	16	D

BELKNAP CREEK BELOW ANN LAKE (1063).

Location.—About half way between Ann lake and Belknap lake, near the proposed site for the diversion dam, and in section 36, township 6, range 7, west of 7th meridian.

Records Available.—June to December, 1914.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge.

Channel.—Boulders and gravel.

Discharge Measurements.—Five meter measurements made during 1913 and 1914 define the rating curve accurately except for very high stages.

Winter Flow.—Stream freezes at gauging section for a week or two in very cold weather.

Accuracy.—D. Poor on account of the infrequency of the gauge readings.

Co-operation.—Gauge readings are made by employees of the Westminster Power Company.

DISCHARGE MEASUREMENTS OF Belknap Creek below Ann Lake, 1913–14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1913.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 24	H. C. Hughes	1,673	27	76	1·8	2·52	135
Aug. 1	do	1,673	32	91	0·9	2·08	82
Sept. 19	F. MacLachlan	1,673	30	60	0·5	1·20	30
1914.							
Aug. 1	C. G. Cline	1,933	31	83	0·6	1·55	50
Nov. 10	H. C. Hughes	1,933	31	59	0·5	1·12	28

DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek below Ann Lake, 1914.

Day.	June.		July.		August.		September.		October.		November.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1					1·55	48	1·05	24		60		200
2			2·75	170		48		26		50	3·20	280
3				150		48		28	1·45	43		200
4				130		50		30		[illegible]		150
5				120		50		32		40		140
6				100		50		34		35		120
7			2·15	90		50		36		30		120
8				95	1·58	50	1·35	38		25	2·40	117
9				100	1·45	43		40	1·05	24		100
10				110	1·42	42		50		30		80
11	1·9	70		115		44		60		50		70
12				120	1·50	46		70		60		50
13			2·45	125	1·55	48		80		70	1·50	46
14				110	1·50	46		100		80		40
15				100	1·50	46		200		100		30
16	2·5	130	2·15	90		40		400		200	1·10	26
17				100		35		500		400		30
18	2·4	117	2·25	100	1·23	32	5·10	600	4·55	500		35
19			2·28	100	1·23	32		400		300		40
20				90	1·23	32	3·05	220		200		45
21				80	1·23	3[illegible]		200		100	1·55	48
22				70	1·23	32		150		80		70
23				60		30		100		50	2·15	90
24			1·76	60		30		100	1·55	48		100
25				60	1·13	27		90		45		110
26				60		27		90		45		120
27			1·76	60		26		90		45	2·45	125
28				55		26	2·10	85	1·45	43		100
29	2·3	105		50	1·10	26		80		50		90
30	2·6	145	1·55	48		25		70		100		60
31				48		25				200		

DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek below Ann Lake, for 1914.—*Concluded.*

Day.	December.	
	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.
1		50
2	1·56	48
3		45
4	1·40	40
5		35
6		30
7		30
8		25
9	1·06	24
10		23
11	1·00	[illegible]
12		[illegible]
13		[illegible]
14		[illegible]
15		[illegible]
16		20
17		20
18		20
19		20
20		20
21		18
22		18
23		18
24		18
25		18
26		18
27		18
28		18
29		18
30		18
31	0·85	18

MONTHLY DISCHARGE of Belknap Creek below Ann Lake, for 1914.

Month.	Discharge in Second-Feet.			Accuracy
	Maximum.	Minimum.	Mean.	
July	170	48	80	C
August	80	25	38	C
September	600	24	134	D
October	500	24	101	D
November	250	26	93	D
December	50	18	24	D

BOULDER CREEK (1001).

Location.—Near mouth of creek and near Jones lake in section 28, township 3, range 27, west of 6th meridian.

Records available.—Daily discharges from January, 1913, to December, 1914.

Drainage Area.—Not known.

Gauge.—A fine wire is stretched tightly across the stream, and the distance to the water surface is measured with a graduated rod. These figures are subtracted from 15.00 to give the direct readings.

Channel.—Bed of stream covered with large rocks, giving an uneven bottom but good control.

Winter Flow.—The stream freezes over for a month or two each winter.

Accuracy.—Below 100 cubic feet per second, "[illegible]". Above 100 cubic feet per second, "C".

Co-operation.—The records on this stream are kept by Messrs. Anderson and Warden, Civil Engineers, Vancouver, for the [illegible] Power Company.

DISCHARGE MEASUREMENTS of Boulder Creek near mouth, 1911-12-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of section.	Mean Velocity.	Gauge Height.	Discharge.
1911.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Nov. 3 ...	K. N. Smith ...	1,0[illegible]	28	24	0·5	4·20	12·6
1912.							
Sept 8	C. G. Cline ...	1,046	30	24	0·5	4·25	13·4
1913.							
July 24 ...	K. G. Chisholm	1,055	27	52	1·6	4·90	84·6
Sept. 11 ...	K. G. Chisholm and F. MacLachlan ...	1,055	32	34	1·0	4·60	34·6
1914.							
July 24......	C. G. Cline ...	1,933	30	34	0 7	4·40	22·7

DAILY GAUGE HEIGHT AND DISCHARGE of Boulder Creek near mouth, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	4·25	15	4·3	16	4·8	65	4·45	25	5·1	120	5·25	150
2	4·25	15	4·3	16	4·65	44	4·45	25	5·4	180	5·25	150
3	4·25	15	4·4	22	4·55	33	4·8	65	5·45	190	5·15	130
4	5·3	160	4·4	22	4·5	28	5·0	105	5·15	130	4·9	85
5	5·6	220	4·4	22	4·45	25	5·25	150	5·05	115	4·8	75
6	6·0	300	4·95	95	4·4	22	5·05	110	5·0	105	4·75	58
7	5·35	170	4·7	50	4·4	22	5·05	110	5·05	115	4·7	50
8	4·95	95	4·55	33	4·6	37	5·1	120	5·1	120	4·7	50
9	4·75	57	4·5	28	4·6	37	5·1	120	5·2	140	4·8	65
10	4·7	50	4·4	22	4·5	28	5·1	120	5·3	160	4·75	58
11	4·65	43	4·25	15	4·5	28	5·05	110	5·25	150	4·9	85
12	4·6	37	4·25	15	4·5	28	5·0	105	5·25	150	5·05	115
13	4·55	33	4·2	13	4·8	65	5·05	110	5·3	160	5·05	115
14	4·55	33	4·2	13	5·3	160	5·1	120	5·5	200	5·05	115
15	4·5	28	4·25	15	4·8	65	5·3	160	5·3	160	5·1	120
16	4·5	28	4·3	16	5·0	105	5·0	105	5·2	140	5·15	130
17	4·4	22	4·3	16	5·1	120	4·85	75	5·2	140	5·05	115
18	4·4	22	4·3	16	5·0	105	4·85	75	5·2	140	5·0	105
19	4·4	22	4·3	16	4·95	95	5·4	180	5·15	130	4·9	85
20	4·35	19	4·35	19	5·1	120	5·1	120	5·2	140	4·9	85
21	4·35	19	4·4	22	5·1	120	4·9	85	5·2	140	4·8	65
22	4·35	19	4·5	28	5·0	105	4·85	75	5·25	150	4·8	65
23	4·35	19	4·45	25	4·9	85	4·85	75	5·3	160	4·75	58
24	4·35	19	4·45	25	4·85	75	4·8	65	5·25	150	4·8	65
25	4·40	22	4·45	25	4·7	50	4·75	58	5·15	130	4·85	75
26	4·4	22	4·4	22	4·8	65	4·75	58	5·0	105	4·85	75
27	4·4	22	4·6	37	4·6	37	4·75	58	5·0	105	5·1	120
28	4·4	22	4·5	28	4·55	33	4·75	58	4·9	85	4·9	85
29	4·4	22			4·55	33	4·7	50	4·8	65	4·95	95
30	4·4	22			4·5	28	4·85	75	4·9	85	4·95	95
31	4·35	19			4·5	28			5·1	120	...	...

DAILY GAUGE HEIGHT AND DISCHARGE of Boulder Creek near mouth for 1914.

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	4·95	95	4·3	16	4·[illegible]	9	4·[illegible]	19	5·3	160	4·6	37
2	4·95	95	4·25	15	4·05	9	4·[illegible]	19	5·1	120	4·5	28
3	4·95	95	4·25	15	4·05	9	4·3	16	5·1	120	4·5	28
4	4·9	85	4·25	15	4·05	9	4·3	16	5·25	150	4·4	22
5	4·8	65	4·25	15	4·05	9	4·25	15	5·0	105	4·4	22
6	4·7	50	4·25	15	4·[illegible]	9	4·25	15	4·8	65	4·4	22
7	4·7	50	4·3	16	4·05	9	4·2	13	4·7	50	4·35	19
8	4·7	50	4·45	25	4·[illegible]	22	4·2	13	4·8	65	4·35	19
9	4·7	50	4·3	16	4·[illegible]5	25	4·2	13	4·9	85	4·3	16
10	4·7	50	4·25	15	4·35	19	4·2	13	4·8	65	4·3	16
11	4·7	50	4·25	15	4·5	28	4·4	22	5·15	130	[illegible]	15
12	4·7	50	4·2	13	4·35	19	4·35	19	4·9	85		15
13	4·7	50	4·2	13	4·3	16	4·4	22	4·6	37		15
14	4·7	50	4·2	13	4·35	19	4·3	16	4·6	37		15
15	4·7	50	4·15	12	4·6	37	4·25	15	4·6	37		15
16	4·6	37	4·1[illegible]	12	4·5	28	4·2	13	4·5	28		15
17	4·6	37	4·1[illegible]	12	4·5	28	4·8	65	4·5	28		15
18	4·6	37	4·1[illegible]	12	5·0	105	4·7	50	4·45	25		15
19	4·6	37	4·15	12	4·85	75	4·85	75	4·6	37		15
20	4·6	37	4·15	12	4·7	50	4·65	44	4·7	50		15
21	4·55	33	4·15	12	4·65	44	4·5	28	4·8	65		10
22	4·5	28	4·15	12	4·5	28	4·45	25	4·8	65		10
23	4·45	25	4·1	10	4·45	25	4·4	22	4·8	65		10
24	4·4	22	4·1	10	4·35	19	4·4	22	4·85	75		10
25	4·4	22	4·1	10	4·3	16	4·4	22	4·95	95		10
26	4·4	22	4·1	10	4·25	15	4·35	19	5·10	120		10
27	4·4	22	4·1	10	4·6	37	4·3	16	5·05	115		15
28	4·35	19	4·05	9	4·45	25	4·2[illegible]	15	4·90	85		15
29	4·3	16	4·05	9	4·4	22	4·2[illegible]	15	4·75	60	....	15
30	4·3	16	4·05	9	4·35	19	4·5	28	4·65	44	....	15
31	4·3	16	4·05	9	.	.	4·9	85	....	...	Frozen.	15

MONTHLY DISCHARGE of Boulder Creek near mouth for 1914.

Month.	Discharge in Second-Feet.			Run-Off.	
	Maximum.	Minimum	Mean.	Total in acre-feet.	Accuracy
January	300	15	52	3,200	C
February	95	13	25	1,390	B
March	160	22	61	3,750	B
April	180	25	92	5,470	C
May	200	65	135	8,300	C
June	150	50	91	5,410	C
July	95	15	44	2,700	B
August	25	9	13	800	B
September	105	9	26	1,550	B
October	85	13	25	1,540	B
November	160	25	75	4,520	C
December	37	10	17	1,050	C
The year	300	9	55	39,600	C

BRANDT CREEK AT MOUTH (1002)

Location.—Section 4, township 7, range 7, west of the 7th meridian.

Records Available.—October 19 to December 31, 1912; January 1 to December 31, 1913; January 1, to September 11, 1914, station abandoned, and new station above Young creek used.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge, nailed to tree. Generally five or six readings a week.

Channel.—Rocky bed, giving a rough bottom but permanent control.

Discharge measurements.—Rating curve well defined by nine meter measurements made during 1912 and 1913.

Winter Flow.—Open all year.

Accuracy.—B, when gauge readings were taken frequently enough.

Co-operation.— Gauge readers maintained by Westminster Power Company.

DISCHARGE MEASUREMENTS of Brandt Creek at mouth, 1912-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1912			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Oct. 19	C. G. Cline	1046	30	25	1·5	2·02	37
1913.							
May 29	H. C. Hughes	1673	40	53	2·3	2·63	122
June 9	do	1673	36	49	1·9	2·45	94
June 18	do	1673	36	45	1·7	2·35	75
June 27	do	1673	36	53	2·2	2·57	115
July 3	do	1673	36	42	1·4	2·26	59
July 29	do	1673	19	20	0·6	1·62	1[illegible]
Sept 24	F. MacLachlan	1673	21	19	0·5	1·48	9
*Nov 7	do	1521	41	27	1·3	2·06	36
Nov. 12	do	1521	40	23	1·1	1·91	25
Nov. 13	do	1521	40	21	1·1	1·84	24
1914.							
May 15	do	1521	41	46	2·3	2·[illegible]	102

* Different section.

DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek at mouth for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·00	33	1·8	21	3·0	190	1·9	26	2·5	100	2·5	100
2	2·55	110	1·7	16	2·5	[illegible]	1·92	28	2·65	130	2·4	83
3	2·45	90	1·7	16	2·5	[illegible]	2·6	120	2·6	120	2·2	53
4	5·20	610	1·7	16	2·25	60	2·7	140	2·3	67	2·06	40
5	3·20	230	1·65	14	2·05	37	2·8	155	2·25	60	1·95	30
6	3·30	245		15	2·0	33	2·55	110	2·3	67	1·9	26
7	2·90	175		15		40	2·5	100	2·3	67	...	30
8	..	150	1·7	16		50	2·45	90	2·5	100	...	35
9		100		16		60	2·50	100	2·45	90	...	40
10	..	80	1·7	16		70	2·5	100	2·35	75	2·1	42
11	..	60	1·7	16		80	2·5	100		100	2·2	53
12	..	50	1·75	18		90	2·3	67		120	2·2	53
13	..	40	2·05	37		100	3·5	280	2·7	140	2·3	67
14	2·0	33	1·9	26		110	3·0	190	2·6	120	2·5	100
15		35	1·9	26		120	3·4	265	2·4	83	2·6	120
16		40	1·92	27	2·65	130	2·9	175	2·5	100	2·2	53
17	2·1	42	1·97	31	2·60	120		160	2·25	60	2·1	42
18	2·1	42	1·95	30	2·50	100	2·7	140	2·25	60		40
19	2·1	42	2·0	33	2·65	130	3·4	265	2·25	60	2·06	38
20	1·95	30	2·0	33	2·70	140	2·5	100	2·4	83	2·05	38
21	1·9	26	2·3	67	2·65	130	2·3	67	2·45	90	2·00	33
22		20	2·4	83	2·50	100	2·25	60	2·7	140	2·00	33
23	1·75	18	2·7	140	2·30	67	2·3	67	2·5	100	2·00	33
24	1·7	16	2·5	100	2·20	53	2·25	60	2·3	67	2·10	42
25	1·7	16	2·2	53	2·10	42	2·1	42	2·7	140	2·68	135
26	2·15	48	2·1	42	2·0	33		45	3·3	245	2·40	83
27	1·9	26	2·3	67	1·9	26		45	2·7	140	2·70	140
28	1·8	21	2·2	53	1·9	26	2·15	48	2·3	67	..	130
29	1·8	21			2·3	67	2·15	46	2·1	42	. .	120
30	1·95	30		..	2·1	42	2·3	67	2·3	67	. .	110
31	1·9	26			2·0	33			2·6	120	.	.. .

DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek at mouth for 1914.

Day.	July.		August.		September.	
	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·1	42		7		
2		40		6	1·10	5
3		40	1·3	6		
4		30		6		
5		30		7		
6	1·9	26		7		
7		26		7	1·10	5
8		24		7		
9		22		8		
10		20	1·44	8	1·80	21
11		18		8	1·60	12
12		16		8		
13	1·7	16		7		
14	1·9	26		7		
15	1·8	21	1·40	7		
16		20		6		
17		18	1·24	6		
18		15		6		
19		12		6		
20		10		6		
21	1·45	8		6		
22	1·42	7		6		
23	1·45	8		6		
24		8	1·25	6		
25		8		6		
26		8		6		
27		8		5		
28	1·45	8		5		
29		8		5		
30		8	1·10	5		
31		7		5		

MONTHLY DISCHARGE of Brandt Creek at mouth for 1914.

Month	Discharge in Second-Feet.			Accuracy
	Maximum.	Minimum.	Mean.	
January	610	16	81	D
February	140	14	37	B
March	190	26	80	C
April	280	26	109	B
May	245	42	97	B
June	140	26	65	C
July	42	7	18	D
August	8	5	6	D

BRANDT CREEK ABOVE YOUNG CREEK (1021).

Location.—A few hundred feet above the mouth of Young creek, in section 10, township 7, range 7, west of 7th meridian.

Records Available.—Part of 1914, with interruptions.

Drainage Area.—Not known.

Gauge.—The original staff gauge has been replaced by a chain gauge mounted on a pole which is fastened to trees and projects over the stream.

Channel.—Solid rock at control.

Discharge measurements.—Nine meter measurements were made during 1913 and 1914, but most of them were referred to the old gauge which was washed out.

Winter Flow.—Very heavy snowfall but practically no ice, so that open water conditions obtain all winter.

Accuracy.—D.

Co-operation.—Gauge readers are maintained by Westminster Power Company.

DISCHARGE MEASUREMENTS of Brandt Creek above Young Creek, 1913-1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1913.			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
June 3	H. C Hughes	1673	11	21·5	3·3	1·70	73·5
" 10	do	1673	11	16·5	2 2	1·50	37·0
" 18	do	1673	11	18·0	3·1	1·60	54·2
July 7	do	1673	10	12·9	1·6	1·30	21·0
" 30	do	1673	10	8·4	0·6	0·70	4·7
Sept. 30	F. MacLachlan	1673	9	8·4	0·3	0·51	2·4[1]
1914.							
May 18 ...	F. MacLachlan .	1521	12	15·7	1·5	1·88	23·1
July 31 ..	C. G. Cline	1933	8	1·1	0 7	0·70	0·8
Nov. 14. ...	H. C. Hughes	1933	10	10·4	0·6	1·64	6·0[2]

[1] First staff gauge washed out January 6, 1914 Replaced the same month

[2] Second gauge washed out October 19, 1914 Replaced November 14, 1914, by chain gauge

DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek above Young for 1914.

DAY.	February.		March.		April.		May.		June.		July.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·8	1·5						15		14		40
2								16		12	2·15	52
3								17		12		40
4								18	1·6	12		30
5			1·05	3·5				19		10		20
6					1·9	25·0	1·8	20	1·35	6		15
7								20		6		10
8								20		8	1·40	7
9								20		10		7
10								21		10	1·40	7
11								21	1·6	12		7
12								21		12		6
13								21	1·6	12	1·3	6
14								22		14		5
15								22		16		4
16								22		18	1·0	3
17								23	1·75	18		3
18	1·2	4·0					1·85	23		16	0·94	2·5
19			1·9	25·0				25	1·7	15		2
20								30		15	0·85	1·8
21								40		15		1·6
22					1·6	12·0	2·1	42		14		1·4
								40		13		1·2
								40		12	0·78	1·0
								35		11		1
26								30		10		2
								25		10	0·9	2
28								20		9		2
29								15	1·5	9		1
30					1·65	14·0	1·7	15		20	0·71	0·8
			1·1	4·0				15			0·71	0·8

DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek above Young Creek, 1914.

Day.	August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec. ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		0·8	0·57	0·4					1·70	
2		0·8		0·6						
3	0·7	0·8		0·8	0·90	2·00				
4		0·8		1·0						
5		0·7		1·2					1·60	6
6		0·7		1·4						
7		0·6		1·6						
8		0·6	0·85	1·8					1·50	
9		0·5	0·98	2·8						
10	0·6	0·5		4	0·90	2·00			1·50	
11		0·5		6			2·40			
12		0·5		10						
13		0·5		20						
14	0·6	0·5		50			1·60	6	1·55	
15	0·6	0·5		100						
16		0·5		150			1·50			
17		0·5		200						
18	0·6	0·5	3·20	250	3·20	2·50			1·45	
19		0·5		100						
20	0·6	0·5	1·80	20						
21		0·5		15			2·50		1·45	
22	0·6	0·5		10						
23		0·5		10			2·70		1·35	
24		0·5		10						
25	0·6	0·5		8						
26		0·5		6			2·00			
27	0·6	0·5		4						
28		0·5	1·05	3·5			2·15		1·40	
29	0·6	0·5		3						
30		0·5		3					2·35	
31		0·4								

MONTHLY DISCHARGE of Brandt Creek above Young Creek, for 1914.

Month.	Discharge in Second-Feet.			Accuracy.
	Maximum.	Minimum.	Mean	
May	42	15	24	D
June	20	6	12	D
July	52	0·8	9·1	C
August	0·8	0·4	0·6	C
September	250	0·4	33	D

CAPILANO CREEK (1023).

Location.—Just above the Vancouver intake about 6 miles from the mouth f the creek.

Records Available.—Daily discharges from November, 1913, to date.

Drainage Area.—Fifty-five square miles, estimated by the engineers of the rovincial Water Rights Branch.

Gauge.—Vertical staff, readings twice a day.

Channel.—Rocky bed, water swift at high stages. At low water a small temporary dam is sometimes placed in the channel below the gauge. The gauge readings have been corrected to allow for the backwater caused by it.

Discharge Measurements.—Eight meter measurements during 1914.

Winter Flow.—Open water all year.

Accuracy.—C.

Co-operation.—Gauge readings taken by employees of the Vancouver Waterworks Department.

DISCHARGE MEASUREMENTS of Capilano Creek above city intake, 1914.

Date.	Hydrographer	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
April 23	H. J. E. Keys, F. MacLachlan and C. G. Cline	1057	89	344	2·17	5·10	745
May 28	C. G. Cline	1521	90	354	2·10	5·15	717
June 19	do	1933	86	343	1·91	5·10	[illegible]
Aug 13	do	1933	60	92	1·10	4·10	100[1]
Sept. 9	do	1933	59	95	1·10	4·70	102[1]
Oct 8	C. E. Webb	1057	82	115	1·[illegible]	4·05	191
" 19	H. C. Hughes	1057	113	529	7·[illegible]	7·70	4,100
" 26	do	1933	54	206	2·[illegible]	4·40	407

[1] Affected by backwater from dam.

DAILY GAUGE HEIGHT AND DISCHARGE of Capilano Creek at Intake for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	6·00	1,570	5·05	700	7·75	4,250	4·50	400	5·80	1,350	6·05	1,630
2	6·65	2,420	4·85	580	6·55	2,300	5·70	1,250	6·15	1,760	5·95	1,500
3	6·80	2,650	4·75	520	6·50	2,250	5·75	1,300	5·85	1,400	5·65	1,200
4	10·10	8,330	4·55	420	5·75	1,300	6·00	1,580	[illegible]·40	950	5·15	770
5	9·25	6,900	4·50	400	5·50	1,050	6·60	2,350	5·25	840	4·75	520
6	10·40	8,900	4·50	400	5·35	900	5·80	1,350	5·40	950	4·55	420
7	7·55	3,900	4·50	400	5·15	750	5·20	800	[illegible]·40	950	5·33	[illegible]
8	7·10	3,120	4·50	400	5·60	1,150	5·60	1,150	[illegible]·60	1,150	5·17	780
9	7·15	3,200	4·50	400	5·50	1,050	5·70	1,250	5·50	1,050	5·00	[illegible]
10	6·95	2,870	4·50	400	5·30	870	5·70	1,250	5·25	840	4·92	610
11	6·15	1,760	4·65	470	5·50	1,050	5·60	1,150	5·45	1,000	5·08	670
12	5·85	1,400	4·85	580	5·60	1,150	5·50	1,050	5·65	1,200	5·25	840
13	5·90	1,480	5·00	660	5·75	1,300	7·05	3,050	6·05	1,630	5·25	840
14	5·65	1,200	5·05	700	7·70	4,150	6·75	2,570	6·15	1,760	5·50	1,050
15	5·35	900	5·10	720	5·55	1,100	6·70	2,500	6·00	1,580	6·00	1,580
16	6·80	2,650	5·10	720	5·50	1,050	5·85	1,400	5·65	1,200	5·92	1,500
17	5·95	1,530	5·10	720	5·70	1,250	5·45	1,000	5·50	1,050	5·67	1,220
18	5·90	1,480	5·10	720	5·50	1,050	5·85	1,400	5·45	1,000	5·58	1,120
19	5·70	1,250	5·20	800	5·70	1,250	5·25	900	5·35	900	5·17	780
20	5·20	800	5·20	800	5·95	1,500	5·80	1,350	5·75	1,300	4·95	630
21	5·10	720	5·35	900	5·85	1,400	5·30	870	6·00	1,580	5·17	780
22	4·95	630	6·15	1,750	5·70	1,250	5·15	760	6·10	1,700	5·17	780
23	4·80	550	6·25	1,900	5·15	760	5·15	760	6·00	1,580	5·00	[illegible]
24	4·80	550	6·95	2,880	4·95	630	5·20	800	5·50	1,050	5·00	[illegible]
25	5·55	1,100	5·90	1,480	4·75	520	4·85	580	5·85	1,400	5·83	1,400
26	6·30	1,950	5·50	1,050	4·65	470	4·75	520	6·05	1,760	5·25	840
27	5·10	730	6·15	1,750	4·60	450	4·90	600	5·85	1,400	5·08	670
28	4·90	600	5·70	1,250	4·50	400	4·80	550	5·20	800	5·08	670
29	4·75	520	4·70		4·70	500	4·70	500	4·85	580	5·46	1,000
30	5·35	900			4·60	450	5·05	690	4·95	630	5·62	1,170
31	5·05	700			4·55	420			5·75	1,300		

DAILY GAUGE HEIGHT AND DISCHARGE of Capilano Creek at Intake for 1914 —*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5·67	1,220	3·46	80	3·17	80	4·9	600	9·0	6,400	5·1	725
2	5·75	1,300	3·46	80	3·07	55	5·5	1,050	8·7	5,900	4·8	550
3	5·46	1,000	3·42	80	3·12	55	4·8	550	6·2	1,325	4·8	550
4	5·04	680	3·33	70	3·07	55	4·2	275	7·0	2,950	4·6	450
5	4·79	550	3·37	70	2·82	40	4·1	240	5·6	1,150	4·3	315
6	4·75	520	3·76	140	2·95	45	4·0	205	5·2	800	4·2	275
7	4·67	490	3·80	150	2·95	45	4·0	205	5·3	875	4·1	240
8	4·62	460	3·88	170	3·95	190	3·9	175	7·4	3,600	4·0	205
9	4·46	380	3·67	120	3·45	80	3·9	175	6·2	1,800	4·0	205
10	4·47	370	3·56	100	3·74	135	4·1	240	5·9	1,500	3·9	175
11	4·47	370	3·60	105	3·70	125	4·3	315	6·0	1,600	3·8	150
12	4·47	370	3·60	105	3·37	70	8·0	4,700	5·2	800	3·8	150
13	4·34	330	3·60	105	3·16	60	8·5	5,600	5·0	660	3·6	105
14	4·42	360	3·60	105	3·45	80	5·8	1,350	4·6	450	3·6	105
15	4·30	315	3·60	105	3·95	190	5·1	725	4·2	275	3·6	105
16	4·13	250	3·60	105	3·53	90	9·0	6,400	4·2	275	3·7	125
17	4·30	315	3·52	90	4·12	250	8·1	4,900	4·1	240	3·5	85
18	4·38	350	3·32	70	7·65	4,060	10·2	8,500	4·0	205	3·5	85
19	4·34	330	3·40	75	8·52	5,620	8·3	5,200	5·4	950	3·3	65
20	3·92	180	3·40	75	6·32	1,970	6·7	2,500	5·2	800	3·3	65
21	3·76	140	3·40	75	5·19	790	5·8	1,350	5·4	950	3·3	65
22	3·72	130	3·40	75	4·53	410	5·1	725	5·8	1,350	3·2	60
23	3·84	160	3·40	75	4·19	270	4·8	550	6·5	2,225	3·2	60
24	3·88	170	3·32	70	4·07	235	4·2	275	6·5	2,225	3·1	55
25	3·88	170	3·32	70	3·90	175	4·2	275	6·8	2,650	3·1	55
26	3·97	200	3·32	70	4·82	560	4·2	275	6·0	1,575	3·2	60
27	3·76	140	3·26	65	5·57	1,120	4·2	275	6·0	1,575	3·4	75
28	3·67	120	3·30	65	5·40	950	4·1	240	6·4	2,075	3·4	75
29	3·46	80	3·30	65	4·82	560	4·0	205	5·4	950	4·3	315
30	3·50	85	3·30	65	4·98	650	5·4	950	5·0	660	4·5	400
31	3·50	85	3·30	65			6·5	2,225			4·5	400

MONTHLY DISCHARGE of Capilano Creek at Intake for 1914.

(Drainage area, 55 square miles)

Month	Discharge in Second-Feet.				Run-Off.		Accuracy
	Maximum.	Minimum	Mean	Per square mile.	Depth in inches on Drainage area	Total in acre-feet	
January	8,900	520	2,170	39·50	45·50	133,000	C
February	2,800	400	875	15·90	16·60	48,600	C
March	4,250	400	1,225	22·30	25·70	75,300	C
April	3,050	400	1,220	22·20	24·80	72,600	C
May	1,760	580	1,215	22·10	25·50	74,700	C
June	1,630	420	930	16·90	18·90	55,300	C
July	1,300	80	375	6·82	7·80	23,100	C
August	170	65	90	1·63	1·88	5,500	C
September	5,620	40	635	11·55	12·90	37,800	C
October	8,500	175	1,655	30·10	34·70	101,000	C
November	6,400	205	1,645	29·90	33·40	97,700	C
December	725	55	205	37·30	43·00	12,600	C
The year	8,900	55	1,020	21·35	290·68	737,200	C

CHEHALIS RIVER (1003).

Location.—One and a half miles from the mouth, in section 14, township 4, range 30, west of the 6th meridian.

Records Available.—Continuous records since March, 1912.

Drainage Area.—Two hundred square miles.

Gauge.—Chain gauge suspended over river by pole spiked to two trees and held in position by a stay wire from the top of one of the trees.

Channel.—Rocky bed, water swift at higher stages.

Discharge measurements.—Ten discharge measurements during 1912, 1913 and 1914.

Winter Flow.—Open water all year.

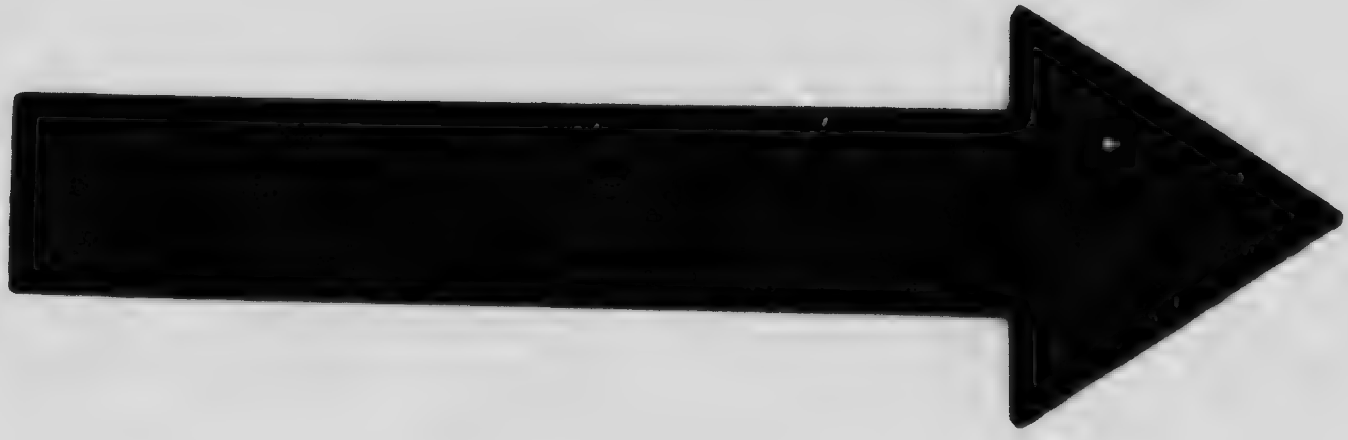
Accuracy.—Below 3,000 cubic feet per second, "B". Above 3,000 cubic feet per second, "C".

DISCHARGE MEASUREMENTS of Chehalis River at 1½ miles from mouth, 1911-12-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of section.	Mean velocity.	Gauge height.	Discharge.
1911			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec. ft.
Dec. 14	N. M. Smith	1057	106	273	3·74	3·80	1,021
1912							
Mar. 8	C. G. Cline	1046	110	162	1·82	2·70	295
July 15	do	1046	123	221	2·42	3·07	535
Sept. 11	do	1046	106	248	2·40	2·90	594
Nov. 23	do	1048	140	600	4·85	4·96	2,910
Dec. 4	do	1048	120	343	3·56	3·92	1,220
1913							
May 21	do	1044	145	460	3·90	4·49	1,810
Sept. 8	do	1055	145	396	3·96	4·40	1,560
1914.							
May 22	do	1521	143	423	4·09	4·50	1,730
Aug. 25	do	1983	100	180	1·10	2·60	198

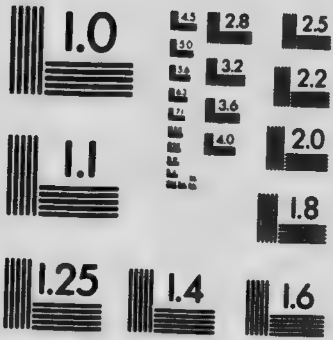
DAILY GAUGE HEIGHT AND DISCHARGE of Chehalis River one mile from mouth for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height.	Discharge.	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3·9	1,140	4·3	1,550	6·4	9,600	4·8	2,450	4·6	2,000	4·1	1,320
2	3·8	1,060	4·2	1,430	5·7	6,250	4·7	2,200	4·55	1,910	4·05	1,270
3	3·7	980	4·05	1,370	5·2	3,850	4·8	2,450	4·5	1,820	4·0	1,220
4	6·6	10,600	3·9	1,140	5·0	3,100	4·9	2,750	4·6	2,000	4·1	1,320
5	8·0	17,000	3·8	1,060	4·7	2,200	5·2	3,850	4·6	2,000	4·0	1,220
6	9·0	23,000	3·7	980	4·5	1,820	5·1	3,450	4·55	1,910	4·0	1,220
7	8·0	17,000	3·8	1,060	4·4	1,670	4·95	2,920	4·5	1,820	4·1	1,320
8	6·4	9,600	3·7	980	4·5	1,820	4·8	2,450	4·45	1,750	4·0	1,220
9	6·0	7,700	3·6	900	4·6	2,000	4·7	2,200	4·4	1,670	3·9	1,140
10	5·5	5,300	3·6	900	4·6	2,000	4·6	2,000	4·6	2,000	3·95	1,180
11	5·2	3,850	3·7	980	4·5	1,820	4·5	1,820	5·0	3,100	4·0	1,220
12	5·1	3,450	3·7	980	4·4	1,670	4·5	1,820	4·8	2,450	4·0	1,220
13	5·0	3,100	3·8	1,060	4·5	1,820	4·6	2,000	4·8	2,450	3·95	1,180
14	5·0	3,100	3·8	1,060	6·5	10,100	4·8	2,450	4·75	2,320	3·95	1,180
15	4·8	2,450	3·8	1,060	5·7	6,250	6·7	11,000	4·70	2,200	3·9	1,140
16	4·7	2,200	3·8	1,060	6·0	7,700	5·7	6,250	4·65	2,100	3·9	1,140
17	4·6	2,000	3·7	980	6·5	10,100	5·4	4,850	4·60	2,000	3·85	1,100
18	4·5	1,820	3·6	900	5·8	6,700	5·6	5,800	4·50	1,820	3·8	1,060
19	4·3	1,550	3·6	900	5·6	5,800	6·9	12,000	4·40	1,670	3·8	1,060
20	4·1	1,320	3·6	900	5·4	4,850	5·8	6,700	4·50	1,820	3·85	1,100
21	3·9	1,140	3·75	1,020	5·2	3,850	5·5	5,300	4·5	1,820	3·9	1,140
22	4·0	1,220	5·2	3,850	5·1	3,450	5·3	4,350	4·55	1,910	3·75	1,020
23	4·1	1,320	5·0	3,100	4·85	2,600	5·0	3,100	4·5	1,820	3·6	900
24	4·0	1,220	5·0	3,100	4·8	2,450	4·8	2,450	4·5	1,820	3·55	860
25	3·8	1,060	4·8	2,450	5·0	3,100	4·7	2,200	4·6	2,000	3·7	980
26	3·9	1,140	4·7	2,200	4·9	2,750	4·6	2,000	4·8	2,450	3·8	1,060
27	4·0	1,220	5·3	4,350	4·7	2,200	4·5	1,820	4·9	2,750	3·8	1,060
28	3·9	1,140	4·9	2,750	4·5	1,820	4·45	1,750	4·5	1,820	3·8	1,060
29	4·0	1,220			4·35	1,610	4·5	1,820	4·2	1,430	3·7	980
30	4·3	1,550		. . .	4·2	1,430	4·6	2,000	4·15	1,370	3·65	940
31	4·4	1,670	.	.	4·2	1,430	.	. . .	4·1	1,320	. . .	. . . .



MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



APPLIED IMAGE Inc
1653 East Main Street
Rochester, New York 14609 USA
(716) 482 - 0300 - Phone
(716) 288 - 5989 - Fax

Daily Gauge Height and Discharge of Chehalis River one mile from mouth for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3·75	1,020	2·8	350	2·50	200	3·8	1,060	6·0	7,700	4·7	2,200
2	3·8	1,060	2·8	350	2·45	170	3·7	980	6·2	8,700	4·5	1,820
3	3·8	1,060	2·8	350	2·4	150	3·5	820	6·0	7,700	4·3	1,550
4	3·8	1,060	2·8	350	2·4	150	3·4	750	6·5	10,100	4·2	1,430
5	3·8	1,060	2·8	350	2·4	150	3·3	670	5·9	7,200	4·05	1,270
6	3·7	980	2·75	320	2·35	120	3·25	630	5·4	4,850	3·85	1,100
7	3·65	940	2·75	320	2·35	120	3·2	600	5·2	3,850	3·7	980
8	3·6	900	2·8	350	2·4	150	3·2	600	5·3	4,350	3·6	900
9	3·5	820	2·75	320	2·6	250	3·2	600	5·4	4,850	3·5	820
10	3·4	750	2·65	270	3·0	470	3·25	630	5·5	5,300	3·4	750
11	3·3	670	2·55	220	2·9	410	3·3	670	5·9	7,200	3·35	710
12	3·3	670	2·55	220	2·8	350	4·2	1,430	5·4	4,850	3·20	600
13	3·35	710	2·6	250	2·8	350	3·8	1,060	5·2	3,850	3·2	600
14	3·4	750	2·6	250	3·0	470	4·0	1,230	4·9	2,750	3·15	570
15	3·35	710	2·65	270	3·4	750	3·9	1,140	4·7	2,200	3·15	570
16	3·3	670	2·65	270	3·7	980	4·9	2,750	4·3	1,550	3·1	540
17	3·3	670	2·7	300	4·0	1,230	5·2	3,850	4·0	1,230	3·1	540
18	3·25	630	2·7	300	5·6	5,80[illegible]	5·6	5,800	4·2	1,430	3·05	500
19	3·2	600	2·65	270	4·8	2,450	6·4	9,600	4·6	2,000	3·0	470
20	3·2	600	2·6	250	4·7	2,200	6·0	7,700	4·8	2,450	2·95	440
21	3·15	570	2·6	250	4·5	1,820	5·3	4,350	4·7	2,200	2·85	380
22	3·1	540	2·6	250	4·1	1,320	4·8	2,450	4·8	2,450	2·8	350
23	3·1	540	2·6	250	3·8	1,060	4·5	1,820	5·2	3,850	2·75	320
24	3·05	500	2·6	250	3·7	980	4·3	1,550	5·0	3,100	2·75	320
25	3·0	470	2·6	250	3·6	[illegible]	4·0	1,230	6·0	7,700	2·8	350
26	3·0	470	2·6	250	3·65	940	3·8	1,060	5·6	5,800	2·9	410
27	2·95	440	2·55	225	4·5	1,820	3·7	980	5·4	4,850	2·9	410
28	2·9	410	2·55	225	4·3	1,550	3·6	900	5·3	4,350	2·9[illegible]	440
29	2·85	380	2·5	200	4·0	1,230	3·6	900	5·1	3,450	3·0	470
30	2·8	350	2·45	170	3·9	1,140	3·8	1,060	4·8	2,450	2·9	410
31	2·8	350	2·4	150	...	..	5·3	4,350	.....	..	2·95	440

Monthly Discharge of Chehalis River one mile from mouth for 1914.

(Drainage area, 200 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accuracy
	Maximum	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	22,000	980	4,230	21·15	24·37	260,000	C
February	4,350	900	1,570	7·85	8·17	87,200	B
March	10,100	1,430	3,800	19·00	21 90	234,000	C
April	12,000	1,750	3,610	18·05	20·13	215,000	C
May	3,100	1,320	1,980	9·90	11 41	122,000	B
June	1,320	860	1,130	5·65	6·30	67,000	B
July	1,060	350	690	3·45	3·98	42,400	B
August	350	150	270	1 35	1·56	16,600	B
September	5,800	120	990	4·95	5·52	58,900	B
October	9,600	600	2,040	10·20	11·76	125,400	C
November	10,100	1,230	4,480	22·40	25·00	267,000	C
December	2,200	320	730	3·65	4·21	44,900	B
The year.	22,000	120	2,130	10·65	144 30	1,540,600	C

CHILLIWACK RIVER (1004).

Location.—Five miles above Sumas lake in section 1, township 23, east of Coast meridian.

Records Available.—Daily discharges continuous since November, 1911.

Drainage Area.—Four hundred and fifty square miles, of which about 100 is in the State of Washington.

Gauge.—Vertical staff on rock filled crib. Readings daily.

Channel.—Rocky bottom, good control, water deep; swift at high stages.

Discharge Measurements.—Fifteen meter measurements made during 1911, 1912, 1913, and 1914.

Winter Flow.—Open water all year.

Accuracy.—A.

DISCHARGE MEASUREMENTS of Chilliwack River near Vedder River Hotel, 1911-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1911.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Dec. 18	Smith	1057	76	451·2	2·61	1·70	1,180
1912.							
Mar. 21	C. G. Cline.	1046	65	424·0	1·76	1·00	750
" 22	do	1046	65	508·5	1·52	1·00	770
July 8	do	1046	85	658·0	4·69	2·90	3,090
Aug. 30	do	1046	65	552·0	2·03	1·60	1,120
Nov. 21	do	1048	85	684·0	5·32	3·15	3,540
1913.							
June 5	K. G. Chisholm	1055	165	969·0	8·90	5·00	8,640
July 13	H. J. E. Keys	1055	155	710·0	7·41	4·05	5,270
1914.							
Jan. 10	do	1046	110	816·0	5·47	3·65	4,450
" 12	do	1046	100	718·0	4·31	2·80	3,090
" 13	do	1046	105	740·0	4·49	2·98	3,320
" 15	do	1046	95	790·0	3·70	2·70	2,920
" 17	do	1046	95	780·0	3·27	2·54	2,550
" 22	do	1046	94	665·0	3·04	2·27	2,020
" 23	do	1046	90	718·0	2·63	2·05	1,893

DAILY GAUGE HEIGHT AND DISCHARGE of Chilliwack River near Sumas Lake for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·4	1,000	1·9	1,550	2·6	2,650	2·0	1,700	2·6	2,650	3·6	4,400
2	1·3	900	1·85	1,470	2·4	2,300	2·1	1,850	3·25	3,770	4·25	5,900
3	1·3	900	1·8	1,400	2·3	2,150	2·2	2,000	4·0	5,300	3·9	5,000
4	2·1	1,850	1·75	1,350	2·2	2,000	2·6	2,650	3·45	4,100	3·6	4,400
5	4·65	7,300	1·5	1,100	2·0	1,700	2·95	3,220	3·3	3,850	3·25	3,770
6	7·3	20,000	1·45	1,050	1·9	1,550	2·8	3,000	3·2	3,700	3·0	3,300
7	6·6	16,000	1·5	1,100	1·8	1,400	2·7	2,800	3·1	3,500	2·9	3,150
8	6·0	13,000	1·55	1,150	1·85	1,470	2·75	2,900	3·05	3,400	2·85	3,070
9	5·5	10,900	1·5	1,100	1·85	1,470	2·8	3,000	3·1	3,500	2·7	2,800
10	4·9	8,300	1·5	1,100	1·9	1,550	2·85	3,070	3·15	3,600	2·8	3,000
11	3·7	4,600	1·5	1,100	1·85	1,470	2·9	3,150	3·1	3,500	2·95	3,220
12	3·3	3,850	1·45	1,050	1·8	1,400	2·85	3,070	3·2	3,700	3·05	3,400
13	3·2	3,700	1·4	1,000	1·9	1,550	2·95	3,220	3·3	3,850	3·2	3,700
14	3·1	3,500	1·45	1,050	2·5	2,500	3·1	3,500	3·7	4,600	3·3	3,850
15	3·0	3,300	1·4	1,000	2·5	2,500	3·6	4,400	4·2	5,800	3·7	4,600
16	3·0	3,300	1·45	1,050	2·7	2,800	3·3	3,850	4·0	5,300	4·0	5,300
17	2·8	3,000	1·45	1,050	2·75	2,900	3·05	3,400	3·85	4,900	4·1	5,500
18	2·7	2,800	1·4	1,000	2·85	3,070	3·10	3,500	3·6	4,400	4·0	5,300
19	2·6	2,650	1·4	1,000	2·75	2,900	3·7	4,600	3·5	4,200	3·6	4,400
20	2·5	2,500	1·45	1,050	2·8	3,000	3·6	4,400	3·55	4,300	3·4	4,000
21	2·3	2,150	1·5	1,100	2·8	3,000	3·4	4,000	3·7	4,600	3·3	3,850
22	2·2	2,000	1·6	1,200	2·85	3,070	3·1	3,500	3·9	5,000	3·4	4,000
23	2·15	1,920	1·65	1,250	2·8	3,000	2·95	3,220	3·95	5,100	3·3	3,850
24	2·05	1,770	1·6	1,200	2·75	2,900	2·85	3,070	4·0	5,300	3·25	3,775
25	2·05	1,770	1·65	1,250	2·6	2,650	2·7	2,800	3·8	4,800	3·2	3,700
26	2·1	1,850	1·6	1,200	2·5	2,500	2·65	2,720	3·6	4,400	3·15	3,600
27	2·0	1,700	1·7	1,300	2·35	2,220	2·65	2,720	3·4	4,000	3·2	3,700
28	1·9	1,550	1·9	1,550	2·3	2,150	2·6	2,650	3·3	3,850	3·25	3,775
29	1·85	1,470	....	....	2·3	2,150	2·6	2,650	3·05	3,400	3·3	3,850
30	1·95	1,620	....	....	2·15	1,920	2·55	2,570	3·0	3,300	3·4	4,000
31	1·9	1,550	....	.....	2·1	1,850	......	......	3·25	3,770	....	....

DAILY GAUGE HEIGHT AND DISCHARGE of Chilliwack River near Sumas Lake for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3·6	4,400	2·0	1,700	1·4	1,000	1·6	1,200	3·3	3,850	2·5	2,500
2	3·65	4,500	2·0	1,700	1·35	950	1·65	1,250	3·8	4,800	2·8	3,000
3	3·7	4,600	2·0	1,700	1·35	950	1·7	1,300	3·5	4,200	2·4	2,300
4	3·6	4,400	2·0	1,700	1·3	900	1·6	1,200	3·4	4,000	2·3	2,150
5	3·4	4,000	1·95	1,620	1·25	870	1·55	1,150	3·3	3,850	2·2	2,000
6	3·25	3,770	1·9	1,550	1·2	850	1·5	1,100	3·2	3,700	2·2	2,000
7	3·2	3,700	1·85	1,470	1·2	[illegible]	1·4	1,000	2·9	3,150	2·1	1,850
8	3·2	3,700	1·8	1,400	1·45	[illegible]	1·35	950	2·8	3,000	2·0	1,700
9	3·1	3,500	1·8	1,400	1·55	1,150	1·4	1,000	2·7	2,800	1·9	1,550
10	3·2	3,700	1·75	1,350	1·55	1,150	1·45	1,050	2·8	3,000	1·8	1,400
11	3·2	3,700	1·7	1,300	1·5	1,100	1·4	1,000	3·9	5,000	1·7	1,300
12	3·25	3,770	1·7	1,300	1·4	1,000	1·35	950	3·4	4,000	1·65	1,250
13	3·1	3,500	1·75	1,350	1·35	950	1·4	1,000	2·8	3,000	1·5	1,100
14	3·05	3,400	1·75	1,350	1·4	1,000	1·45	1,050	2·6	2,650	1·55	1,150
15	3·0	3,300	1·7	1,300	1·5	1,100	1·45	1,050	2·5	2,500	1·6	1,200
16	3·1	3,500	1·75	1,350	1·55	1,150	1·5	1,100	2·4	2,300	1·55	1,150
17	2·95	3,220	1·7	1,300	1·7	1,300	2·45	2,400	2·35	2,220	1·5	1,100
18	2·9	[illegible]	1·7	1,300	2·5	2,500	2·6	2,650	2·4	2,300	1·45	1,050
19	2·85	[illegible]	1·65	1,250	2·4	2,300	2·4	2,300	2·5	2,500	1·4	1,000
20	2·8	3,000	1·65	1,250	2·3	2,150	2·25	2,070	2·6	2,650	1·4	1,000
21	2·6	2,650	1,65	1,250	2·2	2,000	2·45	2,400	2·7	2,800	1·35	950
22	2·45	2,400	1·6	1,200	2·1	1,850	2·3	2,150	2·6	2,650	1·35	950
23	2·45	2,400	1·55	1,150	1·9	1,550	2·25	2,070	2·5	2,500	1·3	900
24	2·4	2,300	1·55	1,150	1·8	1,400	2·2	2,000	2·45	2,400	1·3	900
25	2·3	2,150	1·55	1,150	1,75	1,350	2·15	1,920	[illegible]	2,300	1·25	870
26	2·25	2,070	1·55	1,150	1·8	1,400	2·1	1,850	2·8	3,000	1·25	870
27	2·2	2,000	1·5	1,100	1·9	1,550	1·75	1,350	2·75	2,900	[illegible]	850
28	2·2	2,000	1·5	1,100	1·8	1,400	1·75	1,350	2·7	2,800	1·25	870
29	2·15	1,920	1·45	1,050	1·7	1,300	1·8	1,400	2·7	2,800	1·3	900
30	2·1	1,850	1·45	1,050	1·75	1,350	2·0	1,700	2·6	2,650	1·3	900
31	2·05	1,770	1·4	1,000	....	....	2·1	1,850	....	....	1·35	950

MONTHLY DISCHARGE of Chilliwack River near Sumas Lake for 1914.

(Drainage area, 450 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	2,000	900	4,280	9·52	10·98	263,000	B
February	1,550	1,000	1,170	2·60	2·71	65,000	A
March	3,070	1,400	2,250	5·00	5·76	138,000	A
April	4,600	1,700	3,110	6·92	7·72	185,000	A
May	5,800	2,650	4,170	9·28	10·70	256,000	A
June	5,900	2,800	4,000	8·90	9·93	238,000	A
July	4,600	1,770	3,140	6·98	8·05	193,000	A
August	1,700	1,000	1,320	2·93	3·38	81,000	A
September	850	850	1,310	2·91	3·25	78,000	A
October	950	950	1,510	3·36	3·87	93,000	A
November	2,220	2,220	3,080	6·85	7·64	183,000	A
December	850	850	1,340	2·98	3·44	82,000	A
The year	20,000	850	2,560	5·69	77·43	1,855,000	A

COQUIHALLA RIVER (1005.)

Location.—Near mouth of river, not far from Hope, in section 10, township 5, range 26, west of the 6th meridian.

Records Available.—Continuous records since November, 1911.

Drainage Area.—Three hundred and sixty square miles.

Gauge.—Cable gauge on highway bridge. Readings two or three times a week.

Channel.—Bottom rocky and stream rather shallow; water swift at the higher stages.

Discharge Measurements.—Sixteen meter measurements made during 1912, 1913, and 1914.

Winter Flow.— In very cold weather, ice forms along the edges of the stream, with some anchor ice at the riffle which forms the control.

Accuracy.—C. Gauge readings only about three times a week.

DISCHARGE MEASUREMENTS of Coquihalla River near mouth, 1912-13-14.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft
1912.							
June 8	Cline & Corbould	1046	149	597	4·8	3·30	2,880
June 29	C. G. Cline	1046	122	275	3·2	1·90	890
Sept. 13	do	1046	110	171	2·0	1·05	334
Nov. 15	do	1048	120	276	2·8	1·65	762
Nov. 18	do	1048	120	350	3·5	2·25	1,210
Nov. 20	do	1048	120	386	3·9	2·45	1,510
1913.							
May 12	C. G. Cline & K. G. Chisholm	1044	150	576	5·7	3·50	3,140
June 21	C. G. Cline & K. G. Chisholm	1044	154	540	5·8	3·65	3,040
July 21	K. G. Chisholm	1055	122	378	3·7	2·60	1,410
Sept. 9	K. G. Chisholm & F. MacLachlan	1055	119	383	3·7	2·70	1,440
Oct. 13	H. J. E. Keys	1057	129	524	6·0	3·47	3,160
1914.							
July 9	Cline & Hughes	1933	125	299	3·0	1·90	85
July 18	C. G. Cline	1933	120	224	2·5	1·60	55
Aug. 28	do	1933	110	130	1·4	0·75	17
Oct. 27	H. C. Hughes	1933	100	188	1·56	0·91	28
Dec. 18	do	1521	80	206	1·47	1·68	30

---

[1] Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Coquihalla River near mouth.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	....	470	1·5	590	2·6	1,580	...	1,100	..	4,200	4·1	4,160
2	..	470	1·5	590	2·3	1,240		1,200	4·3	4,550	3·8	3,580
3	1·3	470		550		1,000	2·4	1,340	...	4,000		3,200
4		1,000		500		900	2·3	1,240	....	3,600		2,900
5	3·4	2,840	1·3	470	1·7	730		1,900	3·6	3,200	3·20	2,480
6	5·6	7,040	1·5	590	1·65	700	3·25	2,570		3,200		2,350
7	3·9	3,770	..	560	1·6	660		2,600		3,200		2,200
8	3·4	2,840		540	1·9	890		2,800	3·6	3,200	2·95	2,080
9	......	2,500		520	..	810		2,900	...	3,600		2,200
10		2,000		500	1·7	730	3·45	2,930		4,000		2,300
11		1,500	1·3	470	1·8	810	3·5	3,020		4,500	3·2	2,480
12	2·2	1,150		470		1,200		3,300	..	5,000		2,800
13	...	1,100	1·3	470		2,000		3,600		5,400		3,100
14		1,100	1·3	470	3·2	2,480		3,900	5·0	5,880		3,400
15	2·1	1,060	1·45	560		2,200	4·15	4,260	4·85	5,600	3·85	3,670
16	....	1,030		550	2·9	2,000		4,300	4·5	4,930		3,600
17	2·05	1,000		530	3·8	3,580		4,400		4,400		3,400
18	1·92	900	..	520	3·4	2,840		4,500	4·0	3,960	3·65	3,300
19	1·8	810		500	3·3	2,660	4·3	4,550	3·8	3,580		3,100
20	....	810		480	3·05	2,230		3,400		3,800	3·45	2,930
21	1·8	810	1·3	470	3·05	2,230	3·1	2,310	4·1	4,160	3·15	2,400
22	......	800		560	3·15	2,400	..	2,200	...	4,200		2,300
23	......	780	1·6	660		2,200	..	2,100	..	4,250		2,200
24		760		700		2,000		2,000		4,300		2,100
25	....	740	1·7	730	..	1,500	2·9	2,000	4·2	4,360		2,000
26		720		730	2·4	1,340	2·95	2,080	3·8	3,580		1,900
27	...	700		730		1,250		2,500	3·8	3,580		1,800
28	....	680	1·7	730	2·2	1,150		3,000	3·4	2,840		1,700
29	..	670	...			1,050		3,500	3·25	2,570		1,600
30	1·6	660		....	2·0	970	...	4,000	....	2,700	..	1,500
31	1·6	660		...	2·0	970	...	...	3·45	2,930	....	....

DAILY GAUGE HEIGHT AND DISCHARGE of Coquihalla River near mouth for 1914

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		1,400	1·1	370		220	1·05	350		1,000		1,200
2		1,300		350	·70	220		380		1,500		1,150
3		1,200		350		220	1·15	400	3·0	2,150	2·2	1,150
4		1,100	1·0	320		220		370		1,800		1,100
5		1,000		320		220	1·05	350		1,500		1,050
6		900		320		220		340	2·25	1,200		1,000
7		900		320	·70	220		320	2·1	1,060		950
8		900	1·0	320		300	·95	300		1,200		900
9	1·9	890		310	1·05	350		300		1,300		850
10	1·95	930	·95	300		400		300	2·5	1,460	1·8	810
11		900		300	1·3	470		300		1,400		800
12		800	·95	300		470		300		1,300		750
13		800		300		470		300		1,200		700
14		800		290	1·3	470	·95	300	2·2	1,150	1·6	660
15		700		280	1·55	630	·90	270		1,000		600
16	1·6	660		270		700	·90	270		900		500
17	1·6	660		260		800		300	1·8	810		420
18	1·6	660		250	1·95	930		350		900	1·7	300
19		600	·85	250		800		400	2·1	1,060		300
20		600		250		700	1·25	450	2·55	1,520		300
21	1·4	530	·85	250		600		450		1,600		300
22	1·3	470	·85	250		500		400		1,800		300
23	1·3	470		250	1·15	400	1·15	400		2,000		300
24	1·25	450		250	1·1	570		400		2,200	1·0	320
25		450		240		350		350		2,400		320
26	1·25	450	·80	240	1·00	320		300	3·2	2,480		310
27	1·05	350	·75	230		400	·95	300		2,000		300
28		350	·75	230	1·35	500		300	2·5	1,460	·95	300
29		370	·80	240		450		320		1,300		300
30	1·10	370	·75	230		400	1·0	320	2·25	1,200		300
31		370		220				500				290

MONTHLY DISCHARGE of Coquihalla River near mouth for 1914.

(Drainage area, 360 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	7,040	470	1,350	3·75	4·32	83,000	C
February	730	470	560	1·56	1·62	31,100	C
March	3,580	660	1,560	4·34	5·00	95,900	C
April	4,550	1,100	2,850	7·92	8·84	170,000	C
May	5,880	2,570	3,980	11·07	12·75	245,000	C
June	4,160	1,500	2,630	7·31	8·16	156,500	C
July	1,400	350	720	2·00	2·31	44,300	C
August	370	220	279	0·78	0·90	17,200	C
September	930	220	444	1·23	1·37	26,400	C
October	500	270	345	0·96	1·11	21,200	C
November	2,480	810	1,460	4·06	4·53	86,900	C
December	1,200	290	674	1·87	2·16	41,400	C
The year	5,880	220	1,405	3·9	53·07	1,018,900	C

FRASER RIVER (1007).

Location.—At Hope, in section 16, township 5, range 26, west of the 6th meridian.

Records Available.—Daily discharges, continuous since March, 1912.

Drainage Area.—Above gauging station, 85,600 square miles; above mouth, 90,000 square miles.

Gauge.—Painted on rock bluff at Kettle Valley Railway bridge; readings daily.

Channel.—Permanent channel, deep water; swift at higher stages.

Discharge Measurements.—Nine measurements during 1912, 1913, and 1914; some made with meter, some by floats.

Winter Flow.—Not usually ice enough to affect the gauge height-discharge relations.

Accuracy.—C.

Co-operation.—Gauge read by the engineers of the Kettle Valley Railroad.

DISCHARGE MEASUREMENTS of Fraser River at Hope, 1912-14.

Date.	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1912.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
March 5	C. G Cline	1046	690	14,405	1·3	10·0	18,300[1]
June 6	B. Corbould	1046	1,000	19,835	6·8	21·0	147,000
" 28	C. G. Cline	1046	710	26,300	8·5	24·5	225,000[2]
Sept. 24	do	1046	575	12,500	5·9	14·0	73.400[2]
" 26	do	1046	885	17,200	4·0	14·7	70,000[3]
1913.							
June 21	K. G Chisholm	Floats	1,016	27,100	10·2	26·0	278,000[4]
1914.							
July 10	Cline & Hughes	Floats	1,110	25,300	10·3	24·0	234,000[4]
Aug. 28	C. G. Cline	"	951	18,200	6·2	16·8	101,000[4]
Oct. 28	H. C. Hughes	"	870	16,200	4·4	14·5	72.800[4]

[1] Section at gauge. [2] Measured at Yale. [3] Section above gauge. [4] Float measurement.

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Hope for 1914.

DAY.	January.		February.		March		April		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft
1		50,000	11·0	28,000	11·8	36,000	11·5	33,000	17·6	108,000	23·3	206,000
2		50,000	11·2	30,000	11·7	35,000	11·4	32,000	18·3	117,000	23·0	200,000
3		50,000	11·2	30,000	11·5	33,000	11·5	33,000	19·1	129,000	23·1	202,000
4		50,000	11·2	30,000	11·4	32,000	11·6	34,000	19·4	133,000	22·8	195,000
5	13·3	53,000	11·2	30,000	11·4	32,000	12·0	38,000	19·4	133,000	22·8	195,000
6	14·9	73,000	11·1	29,000	11·4	32,000	12·2	40,000	20·3	146,000	23·6	214,000
7	13·6	57,000	10·9	27,000	11·3	31,000	12·3	42,000	20·1	144,000	24·2	229,000
8	13·1	51,000	10·7	25,000	11·3	31,000	12·6	45,000	19·8	138,000	24·3	232,000
9	12·8	47,000	10·8	26,000	11·3	31,000	12·8	47,000	19·9	140,000	24·0	224,000
10	12·6	45,000	10·8	26,000	1 ·3	31,000	13·1	51,000	20·2	145,000	23·9	222,000
11	12·3	42,000	11·1	29,000	11·3	31,000	13·4	54,000	20·4	148,000	23·9	222,000
12	12·1	39,000	11·1	29,000	11·3	31,000	13·7	58,000	21·3	164,000	24·3	232,000
13	12·2	40,000	11·2	30,000	11·3	31,000	14·0	62,000	21·9	176,000	24·4	234,000
14	12·3	42,000	11·3	31,000	11·8	36,000	14·8	72,000	22·8	195,000	24·6	240,000
15	12·1	39,000	11·4	32,000	11·8	36,000	15·4	79,000	23·3	206,000	25·1	253,000
16	11·9	37,000	11·4	32,000	11·7	35,000	15·4	79,000	23·6	214,000	25·6	267,000
17	11·9	37,000	11·4	32,000	11·9	37,000	15·8	84,000	24·0	224,000	26·2	283,000
18	11·9	37,000	11·4	32,000	12·0	38,000	16·2	90,000	24·4	234,000	26·5	292,000
19	11·9	37,000	11·3	31,000	12·0	38,000	16·9	99,000	24·5	237,000	26·9	303,000
20	11·9	37,000	11·2	30,000	12·0	38,000	17·2	108,000	24·1	226,000	27·2	311,000
21	11·5	33,000	11·2	30,000	12·1	39,000	17·1	101,000	23·6	214,000	27·0	306,000
22	11·4	32,000	11·3	31,000	12·2	40,000	17·3	104,000	23·5	212,000	26·2	283,000
23	11·4	32,000	11·3	31,000	12·2	40,000	17·3	104,000	23·7	216,000	25·5	264,000
24	11·4	32,000	11·3	31,000	12·2	40,000	17·3	104,000	24·0	224,000	25·0	250,000
25	11·2	30,000	11·3	31,000	12·1	39,000	16·8	98,000	23·9	222,000	25·0	250,000
26	10·8	26,000	11·3	31,000	11·8	36,000	16·7	96,000	24·0	224,000	24·9	248,000
27	10·9	27,000	11·4	32,000	11·5	33,000	16·8	98,000	24·2	229,000	24·5	237,000
28	10·8	26,000	11·4	32,000	11·4	32,000	17·0	100,000	24·6	240,000	24·5	237,000
29	10·6	24,500			11·5	33,000	17·0	100,000	24·0	224,000	24·2	229,000
30	10·5	24,000			11·5	33,000	17·2	103,000	23·6	214,000	24·9	248,000
31	10·6	24,500			11·5	33,000			23·6	214,000		

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Hope for 1914 —*Con.*

Day	July		August		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	24·9	248,000	20·8	154,000	16·4	92,000	15·0	74,000	15·3	78,000	14·0	62,000
2	25·0	250,000	20·5	150,000	16·0	87,000	15·1	75,000	15·5	80,000	13·9	60,000
3	24·8	245,000	20·3	146,000	15·8	84,000	15·0	74,000	15·6	82,000	13·6	57,000
4	25·1	253,000	20·1	144,000	15·5	80,000	15·2	76,000	15·2	76,000	13·3	53,000
5	25·2	256,000	19·9	140,000	15·4	79,000	15·1	75,000	15·1	75,000	13·1	51,000
6	25·0	250,000	19·7	137,000	15·4	79,000	15·2	76,000	14·9	73,000	13·1	51,000
7	25·0	250,000	19·9	140,000	15·6	82,000	14·7	70,000	14·8	72,000	13·0	50,000
8	24·8	245,000	19·6	136,000	15·5	80,000	14·5	68,000	14·8	72,000	12·8	47,000
9	24·6	240,000	19·4	133,000	15·4	79,000	14·4	66,000	14·6	69,000	12·5	44,000
10	24·5	237,000	19·1	129,000	15·3	78,000	14·2	64,000	14·5	68,000	12·3	42,000
11	24·3	232,000	19·0	127,000	15·3	78,000	14·2	64,000	14·5	68,000	12·0	38,000
12	24·3	232,000	18·8	124,000	15·2	76,000	14·0	62,000	14·3	65,000	11·8	36,000
13	24·2	229,000	18·4	119,000	15·1	75,000	13·9	60,000	14·2	64,000	11·7	35,000
14	24·4	234,000	18·2	116,000	15·0	74,000	14·0	62,000	14·0	62,000	11·6	34,000
15	24·2	229,000	18·1	115,000	15·2	76,000	14·2	64,000	13·8	59,000	11·4	32,000
16	24·0	224,000	18·0	114,000	14·9	73,000	14·5	68,000	13·8	59,000	11·5	33,000
17	23·9	222,000	18·0	114,000	14·4	66,000	14·7	70,000	13·7	58,000	11·5	33,000
18	23·6	214,000	17·9	112,000	14·7	70,000	14·7	70,000	13·6	57,000	11·3	31,000
19	23·6	214,000	17·9	112,000	14·7	70,000	14·9	73,000	13·4	54,000	11·2	30,000
20	23·3	206,000	17·8	110,000	14·9	73,000	14·8	72,000	13·3	53,000	11·2	30,000
21	23·1	202,000	17·6	108,000	14·8	72,000	14·9	73,000	13·2	52,000	11·4	32,000
22	22·9	198,000	17·5	107,000	14·7	70,000	15·0	74,000	13·3	53,000	11·6	34,000
23	23·0	200,000	17·5	107,000	14·9	73,000	14·9	73,000	13·5	55,000	11·7	35,000
24	22·5	188,000	17·4	106,000	15·0	74,000	14·7	70,000	14·0	62,000	11·8	36,000
25	22·3	184,000	17·3	104,000	14·8	72,000	14·8	72,000	13·9	60,000	12·0	38,000
26	22·2	182,000	17·2	103,000	14·8	72,000	14·9	73,000	13·9	60,000	11·9	37,000
27	22·0	178,000	17·0	100,000	14·9	73,000	15·1	75,000	14·0	62,000	12·0	38,000
28	21·8	174,000	17·0	100,000	15·0	74,000	15·0	74,000	13·9	60,000	12·4	43,000
29	21·5	168,000	16·8	98,000	14·9	73,000	15·1	75,000	13·9	60,000	12·6	45,000
30	21·1	160,000	16·8	98,000	15·2	76,000	15·2	76,000	14·0	62,000	12·5	44,000
31	21·0	158,000	16·7	96,000			15·2	76,000			12·3	42,000

MONTHLY DISCHARGE of Fraser River at Hope, for 1914.

(Dra[illegible]ea, 85,000 square miles.)

Month	DISCHARGE IN SECOND-FEET				RUN-OFF	
	[illegible]	[illegible]	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet.
January	[illegible]	24,000	39,500	0·46	0·53	2,430,000
February	32,000	25,000	29,600	0·35	0·36	1,640,000
March	40,000	31,000	34,600	0·40	0·46	2,127,000
April	104,000	32,000	72,900	0·85	0·95	4,330,000
May	240,000	[illegible]	187,000	2·18	2·51	11,500,000
June	311,000	45,000	243,600	2·85	3·18	14,500,000
July	256,000	[illegible]	216,000	2·53	2·92	13,280,000
August	156,000	[illegible]	119,000	1·39	1·60	7,320,000
September	92,000	[illegible]	76,000	0·89	0·99	4,520,000
October	76,[illegible]	[illegible]	[illegible]	0·83	0·96	4,350,000
November	82,000	[illegible]	[illegible]	0·75	0·84	3,830,000
December	62,000	[illegible]	[illegible]	0·48	0·55	2,530,000
The year	311,000	[illegible]	[illegible]	1·16	15·85	72,357,000

Accuracy "C."

HIXON CREEK NEAR MOUTH (1009).

Location.—About half a mile from the mouth, in section 34, township 6, range 7, west of 7th meridian.

Records Available.—November and December, 1912; January to December, 1913; January to July, 1914, station discontinued.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge, readings about three times a week.

Channel.—Rock and gravel.

Discharge Measurements.—Five measurements during 1913 and 1914.

Winter Flow.—Open water conditions, no ice.

Accuracy.—C. and D.

Co-operation.—Gauge readers maintained by Westminster Power Company.

DISCHARGE MEASUREMENTS of Hixon Creek near mouth, 1913-14.

Date.	Hydrographer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1913.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Sept. 24	F. MacLachlan	1673	48	27	1·2	3·79	33
Oct. 18	do	1673	54	44	1·6	4·34	72
Oct. 31	do	1673	51	32	1·2	3·80	36
Nov. 5	do	1521	56	53	2·3	4·59	121
1914.							
May 19	do	1521	59	71	3·1	4·87	217

DAILY GAUGE HEIGHT AND DISCHARGE of Hixon Creek at mouth for 1911.

Day	January		February		March		April		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	4.2	60		50		150	4.15	55	4.75	170	5.2	340
2	4.4	125		60	4.75	170	4.15	55	4.9	210		250
3		300	3.9	19		150	4.85	210		170	4.55	110
4	4.9	250		17		140		250	4.55	110		90
5		200	3.8	15	4.15	75	5.05	300		130	4.2	60
6	5.7	400	3.75	13	4.1	70		230		150		60
7	5.15	340		13		60	4.8	165		170		70
8		300	3.75	13		90	4.79	170	4.8	165		80
9		240	3.75	13		100	4.8	165	4.75	165		80
10		150		13		100		135		180		90
11		140	3.75	13		120	4.9	165		220		100
12		130	3.75	13		110		600		250	4.3	100
13		120		60		160	5.9	450	5	270		110
14		110	4.1	50		150	5.15	340	4.85	250		120
15		100		50		140	5.6	500		220	4.6	125
16		30	4.1	50	4.75	170	4.95	250		180		150
17	4.35	60		50	4.70	150	4.85	210	4.7	150		200
18		45		55	4.65	135		300		300	4.95	250
19	4.65	90		40		150		190	4.9	250		300
20		70	4.2	40		170	4.75	170		270		150
21	4.2	40		120	4.90	185		130	5.1	320		100
22		30	4.4	165		130		160		300	4.40	95
23	4.0	44		150	4.55	110	4.6	125		250		100
24	4.0	44		120	4.65	95		100	4.7	150		200
25		70	4.4	95		90	4.35	90		150	4.95	250
26	4.4	95		90	4.15	55		40		150		250
27	4.1	50	4.65	80	4.05	47		80		160		240
28	4.0	44		100	4.07	49	4.37	80	4.75	165		230
29		50				60		100	4.4	95		220
30	4.2	60			4.3	70		150		200		210
31		40				40			5.1	320		

DAILY GAUGE HEIGHT AND DISCHARGE of Hixon Creek at mouth for 1914.

Day.	July.		August.	
	Gauge Height	Discharge.	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	....	....	....	....
2	....	....	....	....
3	....	....	4·3	70
4	....	....	....	....
5	....	....	....	....
6	....	....	....	....
7	....	....	....	....
8	....	....	....	....
9	....	....	....	....
10	....	....	....	....
11	....	....	....	....
12	....	....	....	....
13	....	....	....	....
14	....	....	....	....
15	....	....	....	....
16	....	....	....	....
17	....	....	....	....
18	4·65	140	....	....
19	....	....	....	....
20	4·75	165	....	....
21	....	....	....	....
22	....	....	....	....
23	4·50	100	....	....
24	....	....	....	....
25	....	....	....	....
26	....	....	....	....
27	....	....	....	....
28	....	....	....	....
29	....	....	....	....
30	....	....	....	....
31	....	....	....	....

MONTHLY DISCHARGE of Hixon Creek at mouth for 1914.

Month.	Discharge in Second-Feet.			Accuracy.
	Maximum.	Minimum.	Mean.	
January	750	44	173	D
February	185	33	64	C
March	185	47	114	C
April	650	55	202	C
May	320	85	199	C
June	360	60	155	D

HIXON CREEK ABOVE BELKNAP CREEK (1064.)

Location.—About a mile above the mouth of Belknap creek, in section 36. township 6, range 7, west of 7th meridian.

Records Available.—April to September, 1914. Not maintained regularly at present.

Drainage Area.—Not known.

Gauge.—Vertical staff, nailed to tree.

Channel.—Rocks and gravel, with natural log weir as control.

Discharge Measurements.—Four meter measurements during 1913 and 1914.

Winter Flow.—Very heavy snowfall and some ice in winter.

Accuracy.—D.

Co-operation.—Gauge readings taken by employees of Westminster Power Company.

DISCHARGE MEASUREMENTS of Hixon Creek above Belknap Creek, 1913-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
July 8	H. C. Hughes	1673	23	31	1·3	1·41	42·1
July 31	do	1673	24	13	0·7	1·15	9·8
Sept 22	do	1673	21	12	0·5	0·90	6·1
1914.							
Aug. 1	C. G. Cline	1933	22	18	0·5	1·01	9·3

DAILY GAUGE HEIGHT AND DISCHARGE of Hixon Creek above Belknap Creek for 1914.

DAY.	April.		May.		June.		July.		August.		September.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1									1·00	10	0·78	4
2							1·4	42				
3												
4					1·3	32						
5												
6			1·8	80	1·05	14						
7							1·2	24				
8											1·0	10
9							1·2	24				
10									0·90	6		
11					1·0	10						
12												
13							1·25	28	1·0	10		
14												
15									1·0	10		
16					1·45	45	1·18	22				
17												
18							1·3	32	0·9	6		
19					1·3	32						
20									0·9	6		
21												
22	1·2	24	1·8	80								
23												
24							0·95	8				
25							0·94	8	0·85	5		
26												
27							1·0	10				
28												
29					1·3	32			0·8	4		
30	1·2	24	1·35	36	1·55	55	1·01	10				
31												

MONTHLY DISCHARGE of Hixon Creek above Belknap Creek, for 1914.

Month.	Discharge in Second-Feet.		
	Maximum	Minimum.	Mean.
June	55	10	28
July	50	8	23
August	10	4	7

Accuracy "D."

JONES CREEK (1010).

Location.—At outlet of Jones lake in section 28, township 3, range 27, west of the 6th meridian.

Records Available.—Continuous records have been kept by Messrs. Anderson and Warden for the Vancouver Power Company since April, 1911.

Drainage Area.—Twenty-five square miles, determined by triangulation survey by Anderson and Warden.

Gauge.—Vertical staff fastened to rock filled crib. Readings daily.

Channel.—Uniform section with deep water and good control.

Discharge Measurements.—Five meter measurements during 1911, 1912, 1913 and 1914.

Winter Flow.—Open water practically all year.

Accuracy.—A.

Co-operation.—The records of this stream are kept by Messrs. Anderson and Warden, Civil Engineers, Vancouver, for the Vancouver Power Company.

DISCHARGE MEASUREMENTS of Jones Creek at Jones Lake, 1911-12-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharg
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1911.							
Nov. 3	K. H. Smith	1057	51	96	0·5	0·50	[illegible]
1912.							
Sept. 18	C. G. Cline	1046	51	104	0·8	0·85	[illegible]
1913.							
July 24	K. G. Chisholm	1055	51	180	2·3	2·06	[illegible]
Sept. 11	K. G. Chisholm & F. MacLachlan	1055	51	131	1·3	1 24	[illegible]
1914.							
July 23	C. G. Cline	1933	51	128	1·3	1·22	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Jones Creek at Jones lake for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·60	60	0·70	70	0·80	85	0·85	90	1·10	140	1·40	215
2	0·60	60	0·70	70	0·90	100	0·80	85	1·20	165	1·50	240
3	0·60	60	0·65	65	0·90	100	0·85	90	1·60	270	1·60	270
4	0·90	100	0·65	65	0·80	85	0·90	100	1·65	280	1·60	270
5	1·75	310	0·60	60	0·75	75	1·10	140	1·45	230	1·50	240
6	2·90	680	0·60	60	0·70	70	1·10	140	1·35	200	1·40	215
7	2·60	600	0·55	55	0·70	70	1·10	140	1·30	190	1·30	190
8	2·15	440	0·55	55	0·75	75	1·10	140	1·30	190	1·20	165
9	1·85	340	0·55	55	0·70	70	1·10	140	1·35	200	1·20	165
10	1·60	270	0·55	55	0·70	70	1·10	140	1·35	200	1·15	150
11	1·45	230	0·55	55	0·70	70	1·10	140	1·40	215	1·15	150
12	1·35	200	0·55	55	0·65	65	1·05	130	1·40	215	1·20	165
13	1·25	180	0·50	50	0·70	70	1·10	140	1·40	215	1·30	190
14	1·20	165	0·50	50	1·00	120	1·20	165	1·55	250	1·40	215
15	1·15	150	0·50	50	1·10	140	1·30	190	1·65	280	1·55	260
16	1·10	140	0·50	50	1·15	150	1·40	215	1·55	250	1·70	295
17	1·05	130	0·50	50	1·25	180	1·30	190	1·50	240	1·75	310
18	1·00	120	0·50	50	1·15	150	1·25	180	1·45	230	1·75	310
19	0·95	110	0·45	45	1·10	140	1·45	230	1·40	215	1·65	280
20	0·90	100	0·45	45	1·15	150	1·65	280	1·40	215	1·60	270
21	0·90	100	0·45	45	1·15	150	1·50	240	1·40	215	1·55	250
22	0·85	90	0·55	55	1·10	140	1·40	215	1·45	230	1·50	240
23	0·85	90	0·60	60	1·10	140	1·30	190	1·50	240	1·40	215
24	0·80	85	0·65	65	1·10	140	1·25	180	1·55	250	1·30	190
25	0·80	85	0·65	65	1·10	140	1·20	165	1·55	250	1·30	190
26	0·80	85	0·65	65	1·05	130	1·15	150	1·65	280	1·30	190
27	0·80	85	0·70	70	1·00	120	1·10	140	1·60	270	1·30	190
28	0·80	85	0·65	65	0·95	110	1·10	140	1·45	230	1·30	190
29	0·80	85			0·90	100	1·10	140	1·35	200	1·30	190
30	0·75	75			0·90	100	1·05	130	1·25	180	1·45	230
31	0·70	70			0·85	90			1·25	180	.	...

DAILY GAUGE HEIGHT AND DISCHARGE of Jones Creek at Jones lake for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·55	250	1·00	120	0·85	90	·90	100	1·30	190	1·15	150
2	1·60	270	1·00	120	0·80	85	·90	100	1·70	295	1·10	140
3	1·65	280	1·05	130	0·80	85	·85	90	1·90	325	1·05	130
4	1·70	295	1·10	140	0·80	85	·80	85	1·75	310	1·00	120
5	1·60	270	1·10	140	0·75	80	·75	80	1·65	280	·95	110
6	1·55	250	1·10	140	0·70	70	·70	70	1·55	250	·90	100
7	1·45	230	1·10	140	0·70	70	·70	70	1·45	230	·85	90
8	1·45	230	1·10	140	0·85	90	·70	70	1·30	[illegible]	·80	85
9	1·45	230	1·05	130	0·90	100	·70	70	1·40	215	·80	85
10	1·45	230	1·00	120	0·90	100	·70	70	1·35	200	·75	75
11	1·50	240	1·00	120	1·00	120	·70	70	1·80	325	·75	75
12	1·50	240	1·00	120	1·00	120	·70	70	1·70	295	·70	70
13	1·55	250	1·05	130	0·90	100	·75	80	1·60	270	·70	70
14	1·55	250	1·10	140	0·90	100	·75	80	1·40	215	·65	65
15	1·55	250	1·10	140	1·00	120	·80	85	1·30	190	·65	65
16	1·50	240	1·05	130	0·95	110	·75	80	1·20	165	·60	60
17	1·45	230	1·00	120	0·90	100	1·05	130	1·10	140	·55	55
18	1·45	230	0·95	110	1·10	140	1·15	150	1·10	140	·55	55
19	1·50	240	0·95	110	1·30	190	1·20	165	1·10	140	·55	55
20	1·50	240	0·95	110	1·30	190	1·20	165	1·20	165	·55	55
21	1·40	215	1·00	120	1·20	165	1·10	140	1·20	165	·55	55
22	1·30	190	1·00	120	1·10	140	1·00	120	1·20	165	·55	55
23	1·25	180	0·95	110	1·05	130	·95	110	1·20	165	·50	50
24	1·20	165	0·95	110	1·00	120	·90	100	1·10	140	·50	50
25	1·15	150	0·90	100	0·95	110	·85	90	1·20	165	·50	50
26	1·10	140	0·90	100	0·95	110	·80	85	1·60	270	·50	50
27	1·10	140	0·90	100	1·05	130	·80	85	1·45	230	·50	50
28	1·05	130	0·90	100	1·05	130	·75	80	1·45	230	·50	50
29	1·00	120	0·90	100	1·00	120	·70	70	1·40	215	·50	50
30	1·00	120	0·90	100	0·95	110	·85	90	1·30	190	·50	50
31	1·00	120	0·85	90	. .		1·15	130		. .	·55	55

MONTHLY DISCHARGE of Jones Creek at Jones lake for 1914.

(Drainage area, 25 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accur
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre-feet	
January	680	60	173	6·92	7·98	10,600	A
February	70	45	57	2·28	2·37	3,160	B
March	180	65	109	4·36	5·03	6,700	A
April	280	85	158	6·32	7·05	9,400	A
May	280	140	223	8·92	10·28	13,700	A
June	310	150	221	8·84	9·86	13,200	A
July	295	120	213	8·52	9·82	13,100	A
August	140	90	119	4·76	5·49	7,320	A
September	190	70	114	4·56	5·09	6,780	A
October	165	70	96	3·84	4·43	5,900	A
November	325	140	215	8·60	9·60	12,800	A
December	150	50	73	2·92	3·37	4,490	B
The year	680	45	148	5·90	80·37	107,150	A

LYNN CREEK (1046.)

Location.—Below the overflow from the North Vancouver town intake, and about 4 miles from the mouth of the creek.

Records Available.—Daily discharges since June, 1914.

Drainage Area.—Seventeen square miles. Estimated by the engineers of the Provincial Water Rights Branch.

Gauge.—Cable gauge on flume bridge.

Channel.—Boulders and solid rock.

Discharge Measurements.—Four meter measurements made during 1914.

Winter Flow.—Open water all year.

Accuracy.—C.

Co-operation.—Gauge readings are made by Mr. Kirkland, who is employed at the intake by the Waterworks Department of North Vancouver.

DISCHARGE MEASUREMENTS of Lynn Creek below intake 1914.

Date.	Hydrographer	Meter No	Width.	Area of Section	Mean Velocity	Gauge Height.	Discharge.
1914.			Feet	Sq ft.	Ft per sec	Feet.	Sec -ft.
June 10	C G Cline	1953	30	54·0	2 40	5·00	124
" 17	"	1933	30	60·0	2 30	5·12	135
Aug 18	"	1933	11	9·4	0·20	3·45	2·2
Oct 21	H C Hughes	1933	44	91·0	2·82	5·80	250

DAILY GAUGE HEIGHT AND DISCHARGE of Lynn Creek below Intake for 1914.

DAY.	June.		July.		August.		September.		October.		November.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft
1	..	.....	5·05	130	3·30	2	3·25	1	4·90	110	7·15	510
2	..		4·95	120	3·25	1	3·05	1	4·90	110	7·90	660
3	.		4·85	105	3·15	1	3·00	1	4·50	65	7·30	540
4	.	..	4·85	105	3·10	1	2·90	1	4·35	52	6·15	320
5			4·70	86	3·10	1	2·90	1	4·25	44	5·65	230
6	..	.	4·65	80	3·30	2	2·80	1	4·10	34	5·80	200
7			4·70	86	3·55	7	2·90	1	4·15	37	5·95	285
8	..		4·50	65	3·85	20	3·10	1	4·75	92	5·45	380
9			4·45	[illegible]	3·75	15	3·40	2	4·80	98	6·10	315
10	4·95	115	4·35	[illegible]	3·50	5	3·50	5	4·90	110	6·10	315
11	5·05	130	4·45	60	3·35	2	3·95	25	4·80	98	5·90	275
12	5·05	130	4·40	56	3·30	2	4·30	48	7·40	560	5·75	25
13	5·15	150	4·35	52	3·25	1	4·45	60	6·05	305	5·50	200
14	5·35	180	4·40	56	3·15	1	4·70	86	5·30	170	5·35	180
15	5·30	170	4·35	52	3·25	1	4·85	105	4·95	120	5·20	155
16	5·50	200	4·30	48	3·30	2	5·10	140	6·40	370	5·75	250
17	5·00	125	4·10	34	3·25	2	5·50	200	6·70	425	5·50	20
18	5·20	155	4·05	31	3·35	2	5·85	265	6·50	390	5·50	20
19	5·10	140	4·00	28	3·30	2	6·25	340	6·00	295	5·65	23
20	4·95	120	4·10	34	3·45	3	6·75	480	5·95	280	5·75	250
21	5·30	170	3·95	25	3·40	2	5·50	200	5·90	275	5·70	240
22	5·45	190	3·75	15	3·35	2	5·40	185	5·30	170	5·50	20
23	5·10	140	3·75	15	3·25	2	5·70	240	5·10	140	5·85	270
24	4·85	105	3·80	17	3·35	2	6·05	305	4·90	110	6·35	36
25	4·80	98	3·80	17	3·35	2	6·65	415	4·70	86	6·65	415
26	4·80	98	3·65	10	3·35	2	6·70	425	4·40	56	6·85	45
27	5·00	125	3·60	8	3·15	1	6·30	350	4·30	48	6·75	43
28	5·15	150	3·55	6	3·25	1	5·50	200	4·20	41	6·80	445
29	5·20	155	3·55	6	3·25	1	5·30	170	4·25	44	6 25	34
30	5·35	175	3·40	2	3·15	1	5·15	150	4·95	120	6·00	29
31		.	3·35	2	3·25	1	.	.	5 65	230	.	

DAILY GAUGE HEIGHT AND DISCHARGE of Lynn Creek below Intake for 1914 —*Con.*

Day.	December	
	Gauge Height	Discharge
	Feet	Sec.-ft.
1	5·80	260
2	5·80	260
3	5·95	285
4	5·45	190
5	5·50	200
6	5·35	180
7	5·25	160
8	4·95	120
9	4·65	80
10	4·55	70
11	4·40	56
12	4·40	56
13	4·35	52
14	4·15	37
15	4·05	31
16	3·95	25
17	3·90	22
18	3·90	22
19	3·90	22
20	3·80	17
21	3·75	15
22	3·75	15
23	3·75	15
24	3·65	10
25	3·75	15
26	4·10	34
27	4·70	86
28	4·85	104
29	4·75	92
30	4·40	56
31	4·30	48

MONTHLY DISCHARGE of Lynn Creek below Intake for 1914.

(Drainage area, 17 square miles.)

Month.	Discharge in Second-Feet.				Run-Off		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet	
[illegible]	130	2	47	2·8	3·7	2,900	C
August	30	1	3	0·2	0·2	180	D
September	430	1	145	8·5	9·5	8,600	D
October	560	34	164	9·7	11·2	10,100	C
November	660	155	315	18·5	20·6	18,700	C
December	285	10	85	5·0	5·8	5,200	C

MESLILOET RIVER (1011).

Location.—A short distance below canyon, 8 miles from mouth of river and in section 8 , township 7, range 7, west of 7th meridian.

Records Available.—Continuous since October 31, 1912.

Drainage Area.—Estimated at 65 square miles.

Gauge.—Vertical staff; readings two or three times a week.

Channel.—Boulders and gravel; permanent control.

Discharge Measurements.—Twelve meter measurements taken during 1912, 1913, and 1914 define the rating curve for almost the entire range.

Winter Flow.—Open water conditions all winter.

Accuracy.—The value B is assigned where the gauge readings have been taken frequently enough to warrant it.

Co-operation.—Gauge readers are maintained by the Westminster Power Company.

DISCHARGE MEASUREMENTS of Mesliloet River eight miles from mouth 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1912.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft
Oct. 31	C. G. Cline	1046	70	120	1·6	2·26	188
1913.							
June 6	H. C. Hughes	1673	80	232	2·9	3·25	662
" 13	do	1673	80	240	3·1	3·40	713
" 17	do	1673	80	195	2·4	2·90	446
July 3	do	1673	80	203	2·4	2·98	471
" 29	do	1673	75	146	1·6	2·28	230
Sept. 17	C. G. Cline	1673	70	109	1·2	1·87	122
Oct. 9	F. MacLachlan	1673	77	81	0·9	1·61	76
Nov. 10	do	1521	83	186	2·2	2·86	417
" 16	do	1521	85	277	3·5	3·58	942
1914.							
Aug. 2	C. G. Cline	1933	75	131	1·2	2·00	154
Nov. 11	H. C. Hughes	1933	80	220	2·6	3·05	555

---

[1] Station established.

DAILY GAUGE HEIGHT AND DISCHARGE of Mesliloet River eight miles from mouth, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	....	400	....	110	3·80	1,010	2·1	170	2·95	461	3·4	720
2	2·90	436		100		700	2·1	170	3·2	595	3·1	540
3	2·75	368		95	2·75	368		380		490	2·85	410
4	6·80	3,320	1·70	89		290	3·2	595	2·8	389	....	360
5	......	2,400	..	80	2·30	222	......	520	....	380	2·45	265
6	4·60	1,580	1·60	72	2·30	222		470		375		265
7	......	1,440	1·60	72	....	240		430	2·75	366	....	270
8	......	1,270	1·60	72	....	260	2·9	436		388	....	270
9	......	1,110	..	76	....	280	2·95	461	2·85	413		275
10	......	950	1·65	80	....	300	3·0	485	2·8	389	2·5	280
11	......	790	1·65	80		320		400	......	460		295
12	......	620	..	108	....	340	2·6	311		530	2·6	311
13	...	440	1·95	136	......	360		640		600	...	533
14	2·40	251	..	136	....	380	3·75	975	3·3	660	3·45	755
15	......	260	1·95	136	...	400	3·95	1,115	3·2	595	3·6	860
16	...	270	....	141		420		760	2·9	436		730
17	2·50	280	2·00	147	2·90	436	2·85	413	....	420	3·05	510
18	2·45	265	......	160	2·80	389	3·15	570		400	2·9	436
19	..	235	......	190		464	3·7	940	2·8	389		380
20	2·25	210	...	220	3·10	540	3·15	570	3·0	485	2·65	329
21	2·20	195	2·40	251	3·05	510		440	3·7	940		285
22		160	2·55	295	3·00	485	2·6	311		720	2·40	251
23	1·95	136		350	..	390	2·55	295	3·05	510	2·40	251
24	1·90	125	2·85	413	2·55	295	....	285		650	2·40	251
25		155		300	2·40	251		275	3·5	790	3·05	510
26	2·20	195	2·20	195	2·25	210		265	4·0	1,150	2·55	295
27	..	155		210		190		255	3·3	660		295
28	1·85	116	2·30	222	2·10	170		245	2·8	389		295
29		121			2·50	280	2·35	236	2·5	280		290
30		128			2·30	222		350		360		285
31	1·95	136				200			2·9	436	...	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Mesliloet River eight miles from mouth, for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·50	280		145		50		260		1,600	2·75	[illegible]
2		280	2·00	147	1·46	50		257		1,400		[illegible]
3		280		145		60	2·40	250		1,300		[illegible]
4		280		145		75		210	4·00	1,150	2·35	[illegible]
5		280		140		85		190		900		[illegible]
6	2·50	280		140		100		170		600		[illegible]
7		280		135		115		150	2·70	347	2·00	[illegible]
8		280		130		125		135		380		[illegible]
9		285		125		135	1·85	115		430		[illegible]
10		285		125	2·00	145		150	3·00	485		[illegible]
11		290	1·90	125	1·75	95		200		430		[illegible]
12		290		125		100		400		380	1·80	[illegible]
13		295		120		200		600		290		[illegible]
14	2·55	295		115		300		800	2·35	235	1·70	[illegible]
15	2·50	280	1·85	115		1,000		1,000		210		[illegible]
16		260		100		1,200		1,300		190		[illegible]
17		240	1·65	80	4·50	1,510	4·30	1,370	2·10	170		[illegible]
18		220		80	5·00	1,880		1,300		220	1·60	[illegible]
19		195		80		1,300		1,200	2·50	280		[illegible]
20		170		75	3·40	720	4·00	1,150		450		[illegible]
21	1·95	136		75		700		1,000		600	1·55	[illegible]
22	1·95	136		70		600		850		750		[illegible]
23		145		70		500	3·40	720	3·65	900	1·	[illegible]
24		155		65		400		600		1,100		[illegible]
25		165		65		350		460	4·40	1,440		[illegible]
26		175		65		350		330		1,200		[illegible]
27		185		60		350	2·20	195		1,000	1·55	[illegible]
28	2·20	195		60	2·65	330		300	3·55	820		[illegible]
29	1·95	136		55		300		1,000		800		[illegible]
30		140		55		280		1,500		700		[illegible]
31		145		50			4·90	1,800			1·90	[illegible]

MONTHLY DISCHARGE of Mesliloet River eight miles from mouth, for 1914.

(Drainage area, 65 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accur
	Maximum	Minimum	Mean	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	3,320	116	597	9·2	10·6	36,700	B
February	413	72	162	2·5	2·6	9,000	B
March	1,010	170	360	5·5	6·3	22,100	B
April	1,115	170	460	7·1	7·9	27,400	B
May	1,150	280	520	8·0	9·2	32,000	B
June	755	251	393	6·0	6·7	23,400	B
July	295	136	228	3·5	4·0	14,000	C
August	147	50	99	1·5	1·7	6,100	C
September	1,880	50	447	6·9	7·7	26,600	C
October	1,800	115	644	9·9	11·4	39,600	C
November	1,600	170	691	10·6	11·8	41,100	C
December	370	60	121	1·9	2·2	7,400	C
The year	1,550	50	394	6·05	82·1	285,400	C

NICOLUM RIVER (1058).

Location.—At the pack trail bridge, 4 miles from the mouth of the river and 9 miles from Hope; in section 27, township 4, range 5, west of 6th meridian.

Records Available.—August to December, 1914 irregular.

Drainage Area.—Thirty square miles (above gauging station).

Gauge.—Vertical staff. Readings irregular.

Channel.—Rocky; water swift at high stages.

Discharge Measurements.—Four during 1914; one of them was under ice conditions.

Winter Flow.—Stream remains open all winter but during cold spells anchor ice disturbs somewhat the ordinary relation between gauge height and discharge.

NICOLUM RIVER.

The Nicolum river has its source in the Nicolu [illegible] at an elevation of something like twenty-one hundred feet. It disch[illegible] into the Coquihalla river near Hope, about 4 miles from the Fraser riv[illegible] elevation of some three hundred feet. The stream has a drainage ar[illegible] square miles above the gauging section.

For the greater part of the year there is no di[illegible]rface flow from the lakes into the river, but the flow is kept up by seep[illegible] which [illegible] out [illegible] springs in the bed of the stream, some little distance [illegible] the lake. It is only for a short period during the spring freshet that the [illegible] overflow directly into the stream. This condition of affairs gives a very uniform flow wh[illegible] however, is affected to some extent by two tributaries which enter from the [illegible] of the stream a few miles below the lake.

The precipitation [illegible] the Nicolum river watershed probably [illegible] something over seventy inch[illegible] the winter there is very little snow near the mouth of the creek, but at the headwaters there is a considerable depth. The stream does not generally freeze at the gauging station but the [illegible] sometimes backed up a little by ice.

The pack trail from Hope to Princeton follows the [illegible] from its mouth to the lakes. Part of this road was widened at one [illegible] the use of wagons, and it would be a simple matter to convert it into [illegible] road at least as far as the Nicolum lakes. Lately, however, it [illegible] merely as a pack trail.

There is practically no settlement or development in the [illegible]um valley. The country is mostly mountainous, and there is very little [illegible]ming land, with the exception of a fringe around the lakes.

The Nicolum lakes are located at one end of a valley which lies among the hills at an altitude of some twenty-one hundred feet. The Nicolum river drains one end of this valley. The Sumallo river flows down from the hills near the other end of the valley on its way to join the Skagit below. The natural conditions are such that it would be quite possible to divert the Sumallo river into the Nicolum lakes. This would give a fairly good flow of water at quite a high head. By utilizing the total fall to the Fraser river, a head of something like two thousand feet could be obtained, though this would require a pipe line about 10 miles long. The lakes would give good storage, particularly since their area could be greatly increased by means of storage dams. The natural seepage which takes place from the lakes at present would be a considerable disadvantage. However, test pits which have been sunk, seem to indicate that there is only one of the lakes that supplies this seepage and that the glacial silt in the rest of the valley bottom would prevent any such losses, provided that the one troublesome lake was omitted from the storage system.

The flow available for such a development is given by the flow of the Sumallo river as measured at the station eight miles from the mouth. To this must be added a portion of the flow as measured at the station on the Nicolum, which cannot all be utilized because it includes the water brought down by the two tributaries which enter below the lake, and it would only be possible to divert one of these streams into the proposed pipeline. The measurements at the upper station on the Sumallo, however, are not as complete as those which have been taken at the station near the mouth, since it was not possible to get regular gauge readings. In using the flow of the Sumallo river at the lower station, a considerable reduction should be made. This amount can be determined by comparing the discharges at the two stations, at various times of the year. It is expected that next year more complete data on these streams will be available.

DISCHARGE MEASUREMENTS of Nicolum River at Nine-mile Bridge, 1914.

Date.	Hydrographer	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Dischar
1914.			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-f
July [1]17	C. G. Cline	3	26	27·0	2·80	1·55	74
Aug. 27	do	4	26	16·4	1·50	1·10	24
Oct 29	H. C. Hughes	53	28	15·7	1·60	1·10	24
Dec. 17	do	1521	28	16·5	1·87	1·35	[illegible]

[1] Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Nicolum River four miles from mouth for 1914.

Day.	July Gauge Height	July Discharge	August Gauge Height	August Discharge	September Gauge Height	September Discharge	October Gauge Height	October Discharge	November Gauge Height	November Discharge	December Gauge Height	December Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
[illegible]				[illegible]								
[illegible]			1.[illegible]	[illegible]			[illegible]	[illegible]				
[illegible]				[illegible]								
[illegible]			1.[illegible]	[illegible]				[illegible]				
[illegible]							1.[illegible]	[illegible]			1.40	85
[illegible]								[illegible]				
[illegible]											1.[illegible]	[illegible]
[illegible]							[illegible]	[illegible]				
[illegible]			1.25	40								
[illegible]				55							1.40	57
[illegible]			1.20	[illegible]								
[illegible]					[illegible]	45						
[illegible]											1.25	40
[illegible]					[illegible]	[illegible]						
[illegible]	1.55	77	1.20	15								
[illegible]			1.20	13							Ice	33
[illegible]			1.10	25					1.45	64		
[illegible]				[illegible]					1.[illegible]	[illegible]		
[illegible]							[illegible]	15	1.[illegible]	[illegible]		
[illegible]							1.[illegible]	[illegible]	1.[illegible]	[illegible]		
[illegible]									1.70	100		
[illegible]			[illegible]	[illegible]								
[illegible]			[illegible]	[illegible]	1.[illegible]	[illegible]	[illegible]	27				

NORTON CREEK (1013.

Location.—An outlet of Norton lake in section 10, township 7, range 7, west of 7th meridian.

Records Available.—Continuous since October 20, 1912, except for part of January, 1914.

Drainage Area.—Not known—very small.

Gauge.—Vertical staff. Very few readings during the winter of 1914.

Channel.—Boulders.

Discharge Measurements.—Twelve meter measurements made during 1912, 1913, and 1914, define the rating curve accurately except for highest freshets.

Winter Flow.—The lake freezes over, but the stream remains free of ice at the gauge.

Accuracy.—C. and D. Gauge readings irregular for part of the year.

Co-operation.—The gauge readers are maintained by the Westminster Power Company.

DISCHARGE MEASUREMENTS of Norton Creek at Norton Lake, 1912-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Height.	Gauge Velocity.	Discharg
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
1912.							
Oct. 20	C. G Cline	1046	9·0	11·8	0·6	2·53	7·6[1]
1913.							
June 3	H. C. Hughes	1673	16·0	16·0	1·0	2·85	16·3[2]
June 10	do	1673	8·5	9·3	1·0	2·60	9·3
June 24	do	1673	8·0	7·5	0·8	2·52	5·7
July 7	do	1673	10·0	13·3	0·6	2·53	7·7
July 23	do	1673	6·0	6·4	0·3	2·11	1·8
Aug. 2	do	1673	6·0	5·1	0·1	1·85	0·5
Sept. 23	F. MacLachlan	1673	3·5	1·9	0·9	2·06	1·8
1914.							
May 17	F. MacLachlan	1521	10,0	4·0	1·6	2·43	6·2
May 17	do	1521	9·5	11·8	0·6	2·43	6·1
July 31	C. G. Cline	1933	3·0	1·0	0·5	1·80	0·5
Nov. 14	H. C. Hughes	1933	10·0	12·8	0·8	2·65	10·3

[1] Station established

[2] Several different sections used.

[3] Different section for a check.

DAILY GAUGE HEIGHT AND DISCHARGE of Norton Creek at Norton Lake for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height.	Dis-charge	Gauge Height	Dis-charge	Dis-Height	Gauge charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1				3	3·1	27		6		11·0		[illegible]
2			2·2	2·7		22		9		10·0		[illegible]
3				2·8		17		11		9·5		[illegible]
4				2·9	2·8	14		13		9·0	2·4	[illegible]
5	3·50	46		3	2·7	11		15	2·6	8·6		[illegible]
6				3		11	2·9	18	2·55	7·7	2·3	[illegible]
7				3		11		18		7·5		[illegible]
8				3		12		18		7·2		[illegible]
9				3		12		18		6·8		[illegible]
10				3		13		18		6·4		[illegible]
11				3		13		18		6·0	2·3	[illegible]
12				3		14		18		5·9		[illegible]
13				3		14		18		5·8		[illegible]
14				3		15		18		5·7		[illegible]
15				3		15		18		5·6		[illegible]
16				3		16		18		5·5	2·2	[illegible]
17				3		17		18		5·3	2·2	[illegible]
18			2·25	3·2		17		18	2·4	5·2		[illegible]
19			2·25	3·2	2·9	18		18		5·0	2·15	[illegible]
20				3·5		17		18		4·8		[illegible]
21				4		16	2·9	18		4·6		[illegible]
22				5		15	2·8	14	2·35	4·5		[illegible]
23				6		13		14		4·5		4·1
24				7		11		14		4·6		[illegible]
25				8		10		14		4·7		[illegible]
26				9		9		14		4·8	2·40	[illegible]
27				10		8		14		4·9	2·30	[illegible]
28			2·7	11		7		14		5·0	2·30	[illegible]
29						6	2·8	14		5·1	2·30	[illegible]
30						5		12	2·4	5·2	2·30	[illegible]
31					2·3	3·7				5·2		

DAILY GAUGE HEIGHT AND DISCHARGE of Norton Creek at Norton lake, for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	....	3·2	1·8	0·4	1·6	0·1	......	6	....	40	2·85	16
2	2·2	2·7	....	0·4	1·6	0·1		6	3·60	50	2·75	13
3	....	2·4	....	0·4	....	0·1	2·45	6	....	40	2·70	11
4	....	2·1	....	0·4		0·2	......	6	......	30	2·60	8·6
5	....	1·8	....	0·4		0·2	......	5	....	20	2·55	7·6
6	....	1·5	....	0·4	....	0·3		4		10		6
7	2·0	1·2		0·5		0·4	......	4		10	....	5
8	2·0	1·2	1·84	0·5	1·80	0·4		4	2·60	8·6		5
9	2·0	1·2	......	0·5		0·4	....	3	......	10	2·35	4·5
10	2·0	1·2	1·81	0·4	......	0·5	2·20	2·7	......	20	2·30	3·7
11	1·95	0·9	......	0·4	1·85	0·5	....	2·7	3·00	22	2·25	3·2
12	......	0·9	1·80	0·4	......	1·0	......	2·7	2·90	18	....	3·0
13	1·9	0·7	....	0·4	....	2	......	2·7	2·80	14	....	2·5
14	......	0·7		0·4		3		2·7	2·70	11	2·15	2·3
15	......	0·7	1·80	0·4		4	2·20	2·7	......	10	2·15	2·3
16	1·9	0·7	......	0·4	....	5	....	40	2·60	8·6	2·15	2·3
17	......	0·7		0·3		10	4·20	80		8·6	2·15	2·3
18	1·91	0·7	1·75	0·3	2·9	18	4·30	85	2·60	8·6	2·10	1·9
19	1·91	0·7	......	0·3	3·3	36	......	60	......	8·6	....	1·8
20	1·89	0·7	....	0·2	3·25	34	....	40	....	8·6	......	1·6
21	....	0·7	....	0·2	..	30	......	20	2·6	8·6	2·05	1·5
22	......	0·7	1·70	0·2		20	2·80	14		15	2·05	1·5
23	1·89	0·7	......	0·2	....	16	..	10	2·90	18	2·05	1·5
24	......	0·7	1·70	0·2	....	14	2·50	6·7	....	20	....	1·5
25	1·90	0·7	1·70	0·2		12	....	6		20	....	1·6
26	1·94	0·9	......	0·2	....	10	..	5	3·00	22	....	1·7
27	....	0·8		0·1		8		4	3·0	22	..	1·8
28	....	0·6	1·62	0·1	2·55	7·5	2·30	3·7	3·25	34	2·10	1·9
29	......	0·5		0·1	....	7	....	5	....	30	2·10	1·9
30	1·8	0·4	1·62	0·1	....	7	......	10	....	20	2·15	2·3
31	1·8	0·4	1·60	0·1	......	......	......	20	....	....	2·30	3·7

MONTHLY DISCHARGE of Norton Creek at Norton Lake, for 1914

Month.	Discharge in Second-Feet.			Accuracy
	Maximum.	Minimum.	Mean.	
February	....	....	4·3	D
March	....	....	13·2	D
April	....	....	15·5	D
May	....	....	61·6	D
June	5·2	2·3	3·7	C
July	3·2	0·4	1·1	C
August	0·5	0·1	0·3	C
September	36	0·1	8·2	D
October	85	2·7	15·1	D
November	50	8·6	19·4	C
December	16	1·5	4·0	C

SEYMOUR CREEK (1022).

Location.—Above the Vancouver waterworks intake and about seven miles from the mouth of the creek.

Records available.—Daily discharges since November, 1913.

Drainage Area.—Above intake, 76 square miles, estimated by the engineers of the Provincial Water Rights Branch.

Gauge.—Vertical staff gauge spiked to cribbing at intake.

Channel.—Rocks and boulders; water swift at high stages.

Discharge Measurements.—Seven meter measurements during 1913 and 1914.

Winter Flow.—Open water all year.

Accuracy.—B.

Co-operation.—Gauge readings are made by employees of the Vancouver Waterworks Department.

DISCHARGE MEASUREMENTS of Seymour Creek above city intake, 1913-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1913.			Feet.	Sq.-ft.	Ft. per sec.	Fe	Sec.-ft
Nov. 6 ..	H. J. E. Keys................	....	67	133	....	1·60	282[1]
1914.							
Jan. 6	Keys & McLachlan	1046	155	662	6·7	4·20	4,450
April 30	Keys & Webb....	1057	135	368	2·1	2·35	775
May 29	C. G. Cline...........	1521	100	281	1·6	1·91	430
Aug. 14	do	1933	115	157	0·47	0·60	73[2]
Oct. 15	C. E. Webb	1057	139	355	1·9	2·00	600
Oct. 20	H. C. Hughes	1933	160	588	3·9	3·20	2,290

[1] Station established.

[2] Backwater from small dam.

DAILY GAUGE HEIGHT AND DISCHARGE of Seymour Creek at Upper Intake, 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.	Gauge Height.	Dis charge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·95	490	1·55	265	3·20	2,140	1·70	330	2·47	970	2·50	1,000
2	2·35	850	1·45	225	2·45	950	1·60	285	2·75	1,325	2·55	1,060
3	2·65	1,185	1·30	175	2·40	900	2·10	620	2·55	1,060	2·45	950
4	6·10	9,210	1·23	158	2·17	682	2·50	1,000	2·25	755	2·12	640
5	3·55	2,810	1·17	144	1·90	450	3·10	1,920	2·15	665	1·90	450
6	5·00	6,460	1·09	128	1·70	330	2·52	1,025	2·20	710	1·75	415
7	3·05	1,825	1·03	116	1·65	307	2·42	925	2·40	900	1·80	380
8	2·70	1,250	1·00	110	1·77	365	2·35	850	2·30	800	2·05	575
9	2·30	800	1·00	110	1·87	430	2·30	800	2·20	710	2·00	530
10	2·12	638	1·02	114	1·70	330	2·45	950	2·10	620	1·95	490
11	2·20	710	1·10	130	1·60	285	2·40	900	2·25	755	2·00	530
12	2·00	530	1·30	175	1·55	265	2·20	710	2·30	800	2·20	710
13	2·10	620	1·50	245	2·57	1,090	2·92	1,595	2·50	1,000	2·20	710
14	2·00	530	1·50	245	3·72	3,300	3·40	2,580	2·70	1,250	2·35	850
15	1·85	415	1·52	253	2·55	1,060	3·45	2,690	2·60	1,120	2·60	1,120
16	2·55	1,060	1·50	245	2·42	925	2·70	1,250	2·40	900	2·32	1,145
17	2·17	683	1·50	245	2·45	950	2·40	900	2·30	800	2·47	970
18	2·05	575	1·45	225	2·45	950	2·25	755	2·20	710	2·30	800
19	1·95	490	1·45	225	2·45	950	2·80	1,400	2·35	850	2·15	665
20	1·77	365	1·45	225	2·60	1,120	2·60	1,120	2·50	1,000	2·00	530
21	1·65	307	1·85	415	2·50	1,000	2·30	800	2·60	1,120	2·00	530
22	1·52	253	2·27	773	2·45	950	2·20	710	2·65	1,185	2·05	575
23	1·45	225	2·25	755	2·25	755	2·10	620	2·50	1,000	1·95	490
24	1·32	181	2·50	1,000	2·10	620	2·00	530	2·55	1,060	2·00	530
25	1·27	168	2·07	593	1·90	450	1·90	450	2·60	1,120	2·50	1,000
26	1·95	490	1·92	466	1·70	330	1·85	415	2·75	1,325	2·25	755
27	1·65	307	2·07	593	1·60	285	1·95	490	2·77	1,355	2·10	630
28	1·45	225	2·10	620	1·50	245	1·90	450	2·20	710	2·05	575
29	1·45	225	....	....	1·80	380	1·80	380	1·95	490	2·10	620
30	1·75	355	....	....	1·80	380	2·00	530	2·10	620	2·20	710
31	1·45	225	....	....	1·70	330	....	....	2·30	800	....	....

DAILY GAUGE HEIGHT AND DISCHARGE of Seymour Creek above Upper Intake, for 1914.—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	2·20	710	0·90	95	0·35	50	1·85	410	4·70	5,700	2·25	75
2	2·20	710	0·90	95	0·30	50	2·25	750	4·10	4.200	2·10	62
3	2·20	710	0·85	85	0·30	50	1·92	465	2·87	1,500	1·90	45
4	2·10	620	0·85	85	0·30	50	1·70	330	4·20	4,450	1·80	38
5	2·00	530	0·80	80	0·30	50	1·55	265	2·55	1,060	1·70	330
6	1·95	490	0·80	80	0·35	50	1·40	205	2·25	750	1·55	26
7	1·83	415	1·00	110	0·35	50	1·30	175	2·20	710	1·45	22
8	1·85	415	1·10	130	0·85	85	1·25	160	3·95	3,840	1·40	20
9	1·80	380	0·90	95	1·10	130	1·20	150	3·05	1,820	1·30	17
10	1·80	380	0·85	85	1·10	130	1·20	150	2·92	1,600	1·25	16
11	1·80	380	0·80	80	1·15	145	1·30	175	2·65	1,180	1·15	140
12	1·75	355	0·80	80	1·05	120	3·15	2,030	2·30	800	1·10	[illegible]
13	1·70	330	0·70	70	0·95	100	3·60	3,020	2·15	660	1·05	120
14	1·75	355	0·62	65	1·02	115	2·45	950	1·95	490	1·00	110
15	1·65	305	0·57	65	1·45	225	2·00	530	1·60	285	1·00	110
16	1·60	285	0·55	60	1·47	235	4·20	4,460	1·50	245	1·00	110
17	1·50	245	0·50	60	2·02	550	4·05	4,080	1·40	205	1·00	11
18	1·60	285	0·50	60	3·50	2,800	4·70	5,710	1·77	365	1·00	11
19	1·55	265	0·40	55	4·30	4,770	4·35	4,840	2·10	620	0·95	10
20	1·50	245	0·40	55	2·87	1,515	3·05	1,820	2·35	850	0·90	[illegible]
21	1·20	150	0·40	55	2·20	710	2·70	1,250	2·15	660	0·80	[illegible]
22	1·10	130	0·40	55	1·85	415	2·27	775	2·50	1,000	0·80	[illegible]
23	1·20	150	0·40	55	1·57	275	1·95	490	3·45	2,700	0·80	[illegible]
24	1·20	150	0·45	60	1·40	205	1·80	380	3·10	1,920	0·80	[illegible]
25	1·10	130	0·45	60	1·30	175	1·70	330	3·30	2,360	0·85	[illegible]
26	1·15	140	0·42	55	1·52	255	1·60	285	2·80	1,400	0·85	[illegible]
27	1·05	120	0·42	55	2·50	1,000	1·50	245	3·10	1,920	0·85	[illegible]
28	1·00	110	0·40	55	2·30	800	1·40	205	2·72	1,300	1·00	11
29	0·95	100	0·40	55	2·00	530	1·30	175	2·40	900	1·00	11
30	0·95	100	0·42	55	1·90	450	2·35	850	2·20	710	1·05	12
31	0·90	95	0·40	55	....	....	3·20	2,140	....	....	1·05	12

MONTHLY DISCHARGE of Seymour Creek, Upper Station, for 1914.

(Drainage area, 76 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accura
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	9,210	168	1,115	14·68	16·92	68,500	B
February	1,000	110	320	4·22	4·39	17,800	B
March	3,300	245	758	10·00	11·53	46,600	B
April	2,690	285	933	12·30	13·72	55,500	B
May	1,355	490	919	12·10	13·95	56,500	B
June	1,145	380	697	9·17	10·23	41,500	B
July	710	95	315	4·14	4·77	19,400	B
August	130	55	71	0·94	1·09	4,400	C
September	4,710	50	534	7·03	7·84	31,800	B
October	5,710	150	1,220	16·10	18·56	75,000	B
November	5,700	205	1,540	20·30	22·65	91,600	B
December	750	80	18[illegible]	2·44	2·81	11,400	B
The year	9,210	50	717	9·45	128·46	520,000	B

SILVER-PITT CREEK (1017).

Location.—At lower end of canyon about 2 miles from mouth of creek in section 8, township 4, range 5, west of the 7th meridian.

Records Available.—Continuous since August, 1912.

Drainage Area.—Seventy square miles above gauging station.

Gauge.—Vertical staff gauge readings three times a week.

Channel.—Rocky; uneven bottom but permanent control. Deep still pool just above gauging section.

Discharge Measurements.—Eight meter measurements during 1912, 1913 and 1914.

Winter Flow.—Open water all year.

Accuracy.—C. Gauge readings only three times a week.

DISCHARGE MEASUREMENTS of Silver-Pitt Creek at mouth of Canyon, 1912-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq ft	Ft. per sec	Feet.	Sec.-ft.
1912.							
Aug. 9......	C. G. Cline	1046	65	104	2·39	1·50	242
1913.							
May 25......	C. G. Cline	1044	60	121	3·05	2·15	369
July 16......	K. G. Chisholm............	1055	62	100	1·83	1·41	190
Sept. 16	do	1055	57	68	1·35	0·87	92
Sept. 17......	do	1055	55	66	1·27	0·90	84
Oct. 25......	H. J. E. Keys	1057	61	73	1·60	0·99	116
1914.							
July 20....	C. G. Cline	1933	52	60	1·50	0·90	90
Nov 5....	H. C. Hughes	1933	72	142	3·00	2·19	405

Daily Gauge Height and Discharge of Silver Pitt Creek two miles from mouth, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec -ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	....	200	....	140	....	400	1·6	240	1·9	310	1·95	325
2	1·2	155	1·1	135	1·8	285	....	260	....	300	....	300
3	....	200	....	120	....	240	1·8	285	....	290	1·8	285
4	....	800	1·0	115	1·4	195	....	280	1·8	285	....	27
5	4·8	1,220	....	140	....	170	....	270	....	270	1·7	260
6	....	1,200	1·25	165	1·15	145	1·7	260	1·7	260	....	300
7	4·5	1,130	....	160	....	150	....	270	....	270	....	300
8	....	1,100	....	160	....	170	1·8	285	1·8	285	2·05	350
9	4·2	1,040	1·2	155	1·3	175	....	260	....	290	....	320
10	....	800	....	170	....	180	1·6	240	....	300	1·8	285
11	....	500	1·4	195	1·4	195	....	250	1·9	310	....	27
12	2·2	305	....	210	....	240	....	250	....	300	1·7	260
13	....	350	1·55	230	1·8	285	1·7	260	1·8	285	....	270
14	1·8	285	....	200	....	300	....	400	....	270	....	280
15	....	300	....	200	....	400	2·6	530	1·7	260	1·8	285
16	2·0	335	1·3	175	2·3	430	....	480	....	250	....	270
17	....	350	....	160	....	380	2·3	430	1·65	250	1·7	260
18	....	370	1·15	145	2·0	335	....	400	....	260	....	280
19	2·2	395	....	130	....	380	....	350	....	270	1·85	300
20	....	360	1·0	115	2·3	430	2·0	335	1·8	285	....	360
21	2·0	335	....	200	....	450	....	320	....	270	2·3	450
22	....	300	....	300	....	500	1·9	310	1·7	260	....	500
23	1·75	275	2·3	430	2·6	530	....	390	....	300	2·75	580
24	....	250	....	460	....	500	1·75	275	....	330	....	540
25	....	200	2·5	495	2·4	460	....	280	2·1	360	....	500
26	1·4	195	....	530	....	520	....	280	....	500	2·4	460
27	....	180	2·7	565	2·75	580	1·8	285	2·9	630	....	400
28	1·3	175	....	500	....	450	....	290	....	500	....	300
29	....	170	....	....	....	300	1·85	300	2·3	430	1·55	[illegible]
30	1·2	155	....	....	1·8	285	....	300	....	400	....	220
31	....	150	....	....	....	260	....	....	....	370	....	....

DAILY GAUGE HEIGHT AND DISCHARGE of Silver Pitt Creek two miles from mouth, for 1914—*Con.*

Day.	July.		August		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	1·45	210		60	0·4	35		220	3·0	660		350
2		190	0·6	57	0·4	35	1·4	195		560	2·4	460
3	1·25	165		60		[illegible]		200	2·4	460		330
4		160		65	0·35	[illegible]		220	3·0	660	1·4	195
5		150	0·7	70		30	1·6	240	2·2	395	...	150
6	1·15	145		68		35		220	1·8	285	1·0	115
7		140	0·65	63	0·4	35	1·4	195	.....	350	...	100
8	1·1	135		70		60		170		500		90
9		140	0·75	77	0·8	84	1·2	155	3·0	660	0·7	70
10	1·15	145		70		140		150		800	..	60
11		140		70	1·4	195		130	3·8	910	0·45	40
12	1·1	135	0·65	63		200	1·05	125		900		40
13		150		60		220		150	2·0	335	0·4	35
14	1·2	155	0·6	57	1·6	240	1·3	175		300		35
15		160		50		350		190		200		30
16	1·3	175	0·5	45	2·4	460	1·45	210	1·2	155	0·35	30
17		150		45		560		220		140		30
18	1·1	135		40	3·0	500		240	1·05	125	0·3	25
19		130	0·45	40		600	1·7	260		200		25
20	0·95	110		40	2·6	530		370	1·8	285		25
21		100	0·4	35		600	2·45	480		400	0·3	25
22	0·9	100		35		600		540		540		30
23		90	0·4	35	3·0	660	2·8	595	3·0	660	0·4	35
24	0·75	77		37		550		700		550		50
25		70		35	2·4	460		800	2·55	410	0·6	57
26	0·65	63	0·4	35		400	3·5	820		600		70
27		60		30	2·0	335		640	3·3	760		80
28		60	0·35	30		300	2·4	460		730	0·9	100
29	0·6	57	..	30		270		400		700	...	150
30		60	0·35	30	1·6	240	2·0	345	2·9	630	1·4	195
31	0·65	63		35				500				250

MONTHLY DISCHARGE of Silver Pitt Creek, two miles from mouth, for 1914.

(Drainage area, 70 square miles.)

Month	Discharge in Second-Feet.				Run-Off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet	
ary	1,220	150	450	6·43	7·41	27,700	C
ruary	565	115	240	3·43	3·57	13,300	C
[illegible]	580	145	335	4·79	5·52	20,600	C
[illegible]	530	240	310	4·43	4·94	18,400	C
[illegible]	630	250	320	4·56	5·26	19,700	C
[illegible]	580	220	335	4·79	5·34	19,900	C
[illegible]	210	57	125	1·78	2·05	7,700	C
[illegible]	77	30	50	0·71	0·82	3,100	D
ember	660	30	300	4·29	4·79	17,900	C
er	820	125	330	4·71	5·43	20,300	C
ember	910	125	485	6·93	7·73	28,900	C
ber	550	25	110	1·57	1·81	6,800	C
ear	1,220	25	280	4·01	54·67	204,300	C

SLOLLICUM CREEK (1033).

Location.—Near the mouth, in section 19, township 5, range 28 west of the 6th meridian.

Records Available.—Two meter measurements; a few gauge readings have been taken since May, 1914, which will be available when the station has been more fully rated.

Gauge.—Vertical staff; readings irregular.

Channel.—Rocks and gravel.

Discharge Measurements.—Two meter measurements in 1914.

Winter Flow.—Open water all year.

DISCHARGE MEASUREMENTS of Slollicum Creek near mouth, 1914.

Date.	Hydrographer	Meter No	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Feet.	Sq ft.	Ft per sec	Feet	Sec.-ft
1914							
May 23	C. G. Cline	1521	22	20	1·9	1·60	36·4
Aug. 26	"	1933	17	8·5	0·3	0·82	2·2

SOUTH LILLOOET RIVER (1018).

Location.—At upper highway bridge, 8 miles from mouth in section 28, township 12, east of Coast meridian.

Records Available.—Daily discharges continuous since October, 1911.

Drainage Area—One hundred square miles.

Gauge.—Chain gauge on bridge; readings daily.

Channel.—Permanent rocky channel.

Discharge Measurements.—Ten measurements during 1911, 1912, 1913 and 1914.

Winter Flow.—Open water all year.

Accuracy.—B.

DISCHARGE MEASUREMENTS of South Lillooet River 8 miles from mouth 1911-12-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height	Discharge.
			Feet.	Sq ft.	Ft per sec	Feet	Sec.-ft
1911.							
Oct 26	Cline and Smith	1057	100	113	2·0	1·18	
Dec. 13	K. H. Smith	1057	120	316	4·3	2·80	
1912.							
July 4	C. G. Cline	1046	105	151	2·4	1·50	
Aug. 17	"	1046	125	288	3·5	2·70	
Sept 10	"	1046	115	234	3·3	2·00	
Nov 13	"	1046	125	608	8·1	4·60	
1913.							
May 22	"	1044	125	206	4·4	2·45	
July 10	Smith and Cline	1055	125	296	3·8	2·40	
1914.							
Aug. 21	C. G. Cline	1933	80	80	1·5	0·50	
Oct. 22	H. C. Hughes	1933	125	371	5·5	3·12	

DAILY GAUGE HEIGHT AND DISCHARGE of South Lillooet River eight miles from mouth, 1914.

Day.	Jan.		February.		March.		April.		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	1·7	480	1·9	620	2·7	1,440	1·3	270	2·3	980	1·7	480
2	1·8	550	1·6	420	2·6	1,320	1·4	320	2·1	790	1·7	480
3	1·9	620	1·6	420	2·4	1,080	1·5	370	2·1	790	1·8	550
4	2·8	1,570	1·5	370	2·4	1,080	1·5	370	2·0	700	1·7	480
5	5·0	5,500	1·5	370	2·3	980	1·9	620	1·9	620	1·5	370
6	6·1	8,350	1·4	320	2·2	880	1·9	620	1·7	480	1·4	320
7	5·1	6,050	1·2	230	2·1	790	2·0	700	1·7	480	1·5	370
8	4·4	4,500	1·1	200	2·0	700	1·9	620	1·7	480	1·5	370
9	4·0	3,600	1·0	170	2·2	880	1·8	550	1·7	480	1·7	480
10	3·1	2,000	1·0	170		880	1·8	550	1·6	420	1·6	420
11	2·7	1,440	1·0	170	2·4	1,080	1·7	480	1·6	420	1·5	370
12	2·1	790	1·1	200	2·4	1,080	1·7	480	1·7	480	1·5	370
13	1·9	620	1·2	230	2·8	1,570	1·8	550	1·8	550	1·5	370
14	1·8	550	1·2	230	3·1	2,000	2·2	880	1·8	550	1·5	370
15	1·6	420	1·3	270	2·9	1,710	3·0	1,850	1·8	550	1·6	420
16	1·7	480	1·3	270	2·9	1,710	2·8	1,570	1·7	480	1·6	420
17	1·7	480	1·3	270	2·8	1,570	2·6	1,320	1·7	480	1·6	420
18	2·1	790	1·3	270	2·8	1,570	2·6	1,320	1·7	480	1·6	420
19	2·0	700	1·8	550	2·7	1,440	2·7	1,440	1·6	420	1·4	320
20	1·8	550	2·0	700	2·6	1,320	2·7	1,440	1·6	420	1·3	270
21	1·7	480	2·3	980	2·5	1,200	2·5	1,200	1·5	370	1·3	270
22	1·8	550	2·3	980	2·4	1,080	2·4	1,080	1·7	480	1·4	320
23	1·6	420	2·4	1,080	2·2	880	2·6	1,320	1·6	420	1·4	320
24	1·4	320	2·4	1,080	2·0	700	2·6	1,320	1·7	480	1·3	270
25	1·4	320	2·4	1,080	1·9	620	2·6	1,320	1·8	550	1·4	320
26	1·4	320	2·4	1,080	1·8	550	2·6	1,320	2·1	790	1·3	270
27	1·2	230	2·4	1,080	1·7	480	2·8	1,570	2·6	1,320	1·4	320
28	1·4	320	2·4	1,080	1·6	420	3·1	2,000	2·3	980	1·4	320
29	1·6	420			1·5	370	3·0	1,850	2·1	790	1·3	270
30	1·7	480			1·5	370	2·8	1,570	1·9	620	1·3	270
31	1·9	620			1·4	320			1·8	550		

Daily Gauge Height and Discharge of South Lillooet River eight mil from mouth, for 1914—*Con.*

Day.	July		August.		September.		October		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Dis char
	Feet.	Sec. ft.	Feet.	Sec. ft.	Feet.	Sec. ft.	Feet.	Sec.-ft.	Feet.	Sec. ft.	Feet.	Sec. f
1	1·3	270	0·5	110	0·45	105	2·1	790	3·9	3,400	2·0	
2	1·2	230	0·5	110	0·45	105	2·0	700	4·5	4,700	2·7	
3	1·2	230	0·5	110	0·45	105	1·9	620	4·3	4,250	2·5	
4	1·2	230	0·5	110	0·45	105	1·8	550	4·3	4,250	2·35	
5	1·2	230	0·5	110	0·45	105	1·7	480	4·0	3,600	2·1	
6	1·1	200	0·5	110	0·45	105	1·5	370	3·2	2,150	1·9	
7	1·1	200	0·6	120	0·5	110	1·4	320	3·1	2,000	1·8	
8	1·0	17	0·6	120	0·6	120	1·4	320	3·1	2,000	1·7	
9	1·0	170	0·6	120	0·8	140	1·3	270	3·5	2,640	1·5	
10	1·0	170	0·5	110	0·9	150	1·2	230	3·2	2,150	1·4	
11	0·9	150	0·5	110	0·95	160	1·3	270	3·8	3,200	1·3	
12	0·9	150	0·5	110	1·0	170	1·5	370	3·2	2,150	1·25	
13	0·9	150	0·5	110	1·0	170	2·2	880	3·2	2,150	1·2	
14	0·9	150	0·5	110	1·2	230	2·1	790	2·8	1,570	1·1	
15	1·0	170	0·4	100	1·8	550	2·0	700	2·5	1,200	1·0	
16	0·9	150	0·4	100	1·8	550	2·2	880	2·3	980	0·95	
17	0·9	150	0·4	100	2·1	790	3·75	3,100	2·1	790	0·9	
18	0·9	150	0·4	100	2·8	1,570	4·3	4,250	1·7	480	0·9	
19	0·8	140	0·4	100	3·2	2,150	4·9	5,600	1·8	550	0·85	
20	0·8	140	0·4	100	3·2	2,150	4·4	4,500	2·0	700	0·85	
21	0·8	140	0·5	110	3·0	1,850	3·8	3,200	2·1	790	0·8	
22	0·7	140	0·5	110	2·7	1,440	3·1	2,000	2·2	880	0·8	
23	0·7	140	0·5	110	2·3	980	2·6	1,320	3·0	1,850	0·75	
24	0·7	130	0·5	110	2·0	700	2·3	980	3·3	2,300	0·8	
25	0·7	130	0·5	110	1·8	550	2·1	790	3·6	2,820	0·75	
26	0·7	130	0·5	110	1·8	550	1·9	620	3·9	3,400	0·8	
27	0·6	120	0·45	105	2·0	700	1·7	480	3·4	2,470	0·85	
28	0·6	120	0·45	105	2·6	1,320	1·5	370	4·0	3,600	0·9	
29	0·6	120	0·45	105	2·4	1,080	1·5	370	3·8	3,200	0·9	
30	0·6	120	0·45	105	2·2	880	1·5	370	3·2	2,150	0·9	
31	0·5	110	0·45	105	....		2·3	980	....		1·1	

Monthly Discharge of South Lillooet River eight miles from mouth, for 191

(Drainage area, 100 square miles.)

Month	Discharge in Second-Feet				Run-Off.		Accura
	Maximum	Minimum	Mean	Per square mile.	Depth in inches on Drainage area	Total in acre feet	
January	8,350	230	1,450	14·50	16·70	89,200	C
February	1,080	170	532	5·32	5·54	29,500	B
March	2,000	320	1,040	10·40	12·00	63,900	B
April	2,000	270	1,030	10·30	11·50	61,300	B
May	1,320	370	594	5·94	6·85	36,500	B
June	550	270	367	3·67	4·10	21,800	B
July	270	110	161	1·61	1·86	9,900	B
August	120	100	108	1·08	1·24	6,600	B
September	2,150	105	656	6·56	7·32	39,000	B
October	5,600	230	1,210	12·10	13·95	74,400	B
November	4,700	480	2,280	22·80	25·44	135,700	B
December	1,710	135	387	3·87	4·46	23,800	B
The year	8,350	100	818	8·18	110·96	591,600	B

SUMALLO RIVER (1056).

Location.—One mile from mouth and just south of the Railway Belt boundary.

Records Available. Daily discharges beginning July, 1914.

Drainage Area.—Seventy square miles (above mouth).

Gauge.—Vertical Staff.

Channel.—Rocky.

Discharge Measurements.—Six meter measurements by the engineers of the British Columbia Hydrographic Survey and four by L. N. Jensen. One measurement under ice conditions.

Winter Flow.—Stream open all winter, but during very cold weather anchor ice may affect the ordinary relation between gauge height and discharge to some extent.

Co-operation. Four meter measurements were made during 1913 and 1914 by L. N. Jenssen for MacKenzie & Mann.

SUMALLO RIVER.

The Sumallo river rises in the mountains south west of Hope, and flows in a general southeasterly direction to its junction with the Skagit river, some 15 miles north of the international boundary line, and 2 miles from the boundary he Railway Belt. Some of the mountains in its watershed rise to an altitude 5,000 feet. It has a drainage area of 70 square miles. The precipitation is bably more than 90 inches per annum. In the winter the snow fall is quite vy.

Installing metal-faced gauge at metering section on Sumallo river one mile from mouth.

The pack trail from Hope to Princeton follows the Sumallo river for a ance of 7 or 8 miles. It was proposed at one time to improve it into a wagon d but the plan was never completely carried through, and of late years the has been merely kept in repair for pack horses. When the Pacific highway mpleted, it will improve the means of transportation in this part of the try.

There is very little settlement or development in the Sumallo river valley. What little farming land there is is not worked to any great extent. There are some mining prospects, and just recently one mine, near the mouth of the river, has shipped a small quantity of ore. This may lead to some further development.

There is a proposal to divert water from the upper part of the Sumallo river into the lakes which feed the Nicolum river. This would augment the flow of the Nicolum sufficiently to make a power development practicable, but would divert a certain amount of water from the plants which expect to use water from the Skagit river on the American side of the boundary.

This diversion, however, might lead to the most beneficial use of the water, since it could be utilized under a head of something like two thousand feet.

In connection with the above-mentioned plan of development, two gauging stations have been established on the streams. One of these is near the mouth and measures the total flow of the stream. Daily gauge readings are taken at this station. Measurements are made also at a point some 7 miles above the lower station, but gauge readings can be taken only occasionally. The flow at this upper station gives approximately the amount of water which can be diverted into the Nicolum lake and is considerably less than the flow measured at the lower station.

DISCHARGE MEASUREMENTS of Sumallo River at one mile from mouth, 1913-14-15.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Dischar.
1913.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Sept. 19	L. N. Jenssen	....	....	76	2·3	1·00	[illegible]
Nov. 11	do	....	....	76	2·3	1·00	[illegible]
1914.							
June 11	do			130	3·8	2·40	[illegible]
July 12	C. G. Cline	1933	44	[illegible]	3·4	2·00	[illegible]
" 15	do	1933	44	100	3·1	1·72	[illegible]
" 18	L. N. Jenssen	....	....	90	3·1	1·50	[illegible]
Dec. 16	H. C. Hughes	....	39	57	1·3	0·74	[illegible]
1915.							
Mar. 11	Hughes & Cline	1521	30	41	1·3	0·22	[illegible]
" 15	do	1521	40	62	1·9	0·77	[illegible]
" 29	H. C. Hughes	1521	42	67	2·1	1·00	[illegible]

[1] Probably affected by ice

Daily Gauge Height and Discharge of Sumallo River near mouth, for 1914.

Day.	July		August		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0·9	135	0·5	80	0·5	80	0·9	135	1·5	245
2			0·9	135	0·5	80	0·5	80	1·6	265	1·5	245
3			0·9	135	0·5	80	0·5	80	1·8	310	1·3	205
4			0·9	135	0·5	80	0·4	70	1·7	290	1·3	205
5			0·9	135	0·5	80	0·4	70	1·6	265	1·3	205
6			0·9	135	0·4	70	0·4	70	1·7	290	1·2	185
7			0·9	135	0·4	70	0·4	70	1·7	290	1·1	165
8			0·9	135	0·6	90	0·4	70	1·6	265	1·0	150
9			0·8	120	0·6	90	0·5	80	1·6	265	0·8	120
10			0·8	120	0·7	105	0·5	80	1·6	265	0·6	90
11			0·8	120	0·6	90	0·5	80	1·6	265	0·6	90
12	2·0	360	0·8	120	0·6	90	0·5	80	1·5	245	0·6	90
13			0·8	120	0·6	90	0·5	80	1·5	245	0·5	80
14			0·8	120	0·6	90	0·5	80	1·5	245	0·5	80
15	1·7	290	0·8	120	0·6	90	0·5	80	1·5	245	0·5	80
16	1·6	265	0·8	120	0·5	80	0·5	80	1·5	245	0·5	80
17	1·5	245	0·8	120	0·5	80	0·5	80	1·4	225	0·5	80
18	1·5	245	0·7	105	0·6	90	0·6	90	1·3	205	0·5	80
19	1·6	265	0·7	105	0·7	105	0·6	90	1·3	205	0·5	80
20	1·6	265	0·7	105	0·7	105	0·6	90	1·3	205	0·5	80
21	1·7	290	0·6	90	0·7	105	0·7	105	1·3	205	0·5	80
22	1·4	225	0·6	90	0·7	105	0·7	105	1·3	205	0·5	80
23	1·3	205	0·6	90	0·6	90	0·6	90	1·4	225	0·5	80
24	1·2	185	0·6	90	0·6	90	0·6	90	1·4	225	0·4	70
25	1·1	165	0·6	90	0·6	90	0·6	90	1·7	290	0·4	70
26	1·1	165	0·6	90	0·6	90	0·6	90	1·7	290	0·4	70
27	1·1	165	0·6	90	0·6	90	0·6	90	1·7	290	0·4	70
28	1·0	150	0·6	90	0·6	90	0·6	90	1·6	265	0·4	70
29	1·0	150	0·6	90	0·6	90	0·7	105	1·5	245	0·4	70
30	0·9	135	0·6	90	0·5	80	0·7	105	1·5	245	0·4	70
31	0·9	135	0·6	90			0·7	105			0·4	70

Monthly Discharge of Sumallo River near mouth, for 1914.

(Drainage area, 70 square miles.)

Month	Discharge in Second-Feet				Run-Off	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet
st	135	90	112	1·7	2·0	6,890
ber	105	70	88	1·3	1·4	5,240
er	105	70	85	1·2	1·4	5,230
mber	310	135	251	3·6	4·0	14,900
ber	245	70	111	1·6	1·8	6,820

curacy, "B"

SUMALLO RIVER (1057).

Location.—Eight miles from mouth in section 28, township 3, range 21, west of 6th meridian.

Records Available.—Irregular records beginning in July, 1914.

Gauge.—Vertical staff.

Channel.—Gravel.

Discharge Measurements.—Five meter measurements, one of them under ice conditions.

Winter Flow.—Station is somewhat affected by ice during very cold weather.

DISCHARGE MEASUREMENTS of Sumallo River eight miles from mouth, 1914 15

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft
July 16	C. G. Cline	1933	40	73	2·4	1·80	167
Dec. 16	H. C. Hughes	1521	27	15	2·9	1·00	44
1915.							
Mar. 15	Hughes & Cline	1521	36	43	1·3	1·05	59
" 30	H. C. Hughes	1521	37	50	1·6	1·25	80

[1] Station established.

[2] Probably affected by ice.

DAILY GAUGE HEIGHT AND DISCHARGE of Sumallo River eight miles from mouth, for 1914.

DAY	July.		August.		September.		October.		November.		December.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1												
2												
3							1·2	80				
4							1·0	50			1·5	120
5												
6											1·4	105
7												
8							1·2	80				
9												
10												
11												
12			1·3	90								
13											1·3	90
14					1·1	65						
15												
16	1·8	165										
17			1·2	80								
18									1·4	105		
19							1·3	90				
20									1·55	130		
21							1·2	80	1·6	135		
22												
23												
24									1·9	135		
25												
26												
27												
28												
29					1·0	50						
30												
31			1·1	65								

YOUNG CREEK (1020).

Location.—At mouth, in section 10, township 7, range 7, west of 7th meridian.

Records Available.—Continuous s [illegible] ctober 20, 1912, but gauge readings were not always taken very frequently.

Drainage Area.—Not known.

Gauge.—Vertical staff.

Channel.—Solid rock.

Discharge Measurements.—Eight meter measurements taken during 1913 and 1914.

Winter Flow.—Heavy snowfall but not much ice, so that open water conditions obtain practically all winter.

Accuracy.—C and D.

Co-operation.—Gauge readings taken by Westminster Power Company.

DISCHARGE MEASUREMENTS of Young Creek at mouth, 1913-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharg
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft
1913.							
June 3	H. C. Hughes	1,673	18	21·8	2·5	1·80	53·
" 10	"	1,673	14	15·4	2·0	1·50	30·
" 18	"	1,673	13	16·4	2·3	1·65	37·
July 31	"	1,673	11	7·7	0·8	1·03	6·
Sept. 18.	F. MacLachlan	1,673	10	10·8	0·8	1·01	8·
1914.							
May 18	F. MacLachlan	1,521	15	15·4	2·0	[1]1·48	29·
July 31	C. G. Cline	1,933	8			0·92	4·
Nov. 14	H. C. Hughes	1,933	12	10·9	1·0	1·18	10·

[1] Several different sections used.

DAILY GAUGE HEIGHT AND DISCHARGE of Young Creek at mouth, for 1914.

DAY.	January.		February.		March.		April.		May.		June	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Dis-charg
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	-ft
1			0·85	4						28		
2			......	....	......	......	......	......		28	......	
3			......							28		
4	1·8	53								28	1·35	
5					1·2	13				28		
6							1·6	35	1·5	28		
7										28		
8										28		
9										28		
10										28		
11										28	1·35	
12										28		
13										28	1·4	
14										28		
15										28		
16										28		
17										28	1·4	
18			1·2	13	1·6	35			1·5	28		
19										30	1·35	
20										35	1·3	
21										40		
22							1·4	22	1·7	44		
23										42		
24										40		
25										38		
25										38		
26										36		
27										34		
28										32		
29										30		
30							1·5	28	1·5	28		
31					1·2	13				26		

DAILY GAUGE HEIGHT AND DISCHARGE of Young Creek at mouth, for 1914 —*Con.*

Day	July.		August.		September.		October.		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		17		6	0.68	2		15		100	1.25	15
2	1.3	17		5		2		15	2.60	130		15
3		16	0.9	5		3	1.2	13		120		15
4		15		5		4		13		110		10
5		14		5		5		12		100	1.10	10
6		13		5		6		12		90		9
7		11		4		7		11	2.10	82		8
8	1.1	10		4	1.00	7		11		70	1.00	7
9		10		4	1.00	7		10		60		7
10	1.1	10	0.8	3.5		10	1.10	10		40	1.00	7
11		10		3.5		10		10	1.50	28		7
12		9		3.5		15		10		25		6
13	1.05	8		3.5		15		20		20		6
14		8	0.8	3.5		20		30	1.20	13	0.95	6
15		9	0.8	3.5		20		40		11		6
16	1.1	10		3.5		60		60	1.10	10		6
17		10		3.5		80		100		20		6
18	1.1	10	0.8	3.5	2.4	110	3.0	170		40	0.95	6
19		9		3.5		80		150		50		6
20	1.05	8	0.8	3.5	1.7	44		100		60		5
21		8		3.5		40		70	2.00	73	0.90	5
22		8	0.8	3.5		40		50		80		5
23		7		3.5		35		15	2.10	82	0.85	4
24	1.0	7		3		35		13		60		4
25		8	0.75	3		30		10		50		4
26		9		3		30		10	1.55	30		5
27	1.08	10	0.73	3		25		10		40		5
28		9		3	1.45	25	1.05	8	1.80	53	0.90	5
29		8	0.72	3		20		20		40		10
30	0.95	7		3		20		40		30	1.30	17
31	0.93	6		3				60				20

MONTHLY DISCHARGE of Young Creek at mouth, for 1914.

Month	Discharge in Second-Feet			Accuracy
	Maximum	Minimum	Mean	
[illegible]			31	D
[illegible]	24	10	18	D
[illegible]	17	6	10	C
[illegible]	6	3	3.7	C
[illegible]	110	2	27	D
[illegible]	170	10	36	D
[illegible]	130	10	57	D
[illegible]	20	4	8	D

BIG QUALICUM RIVER (1032).

Location.—One thousand feet upstream from Esquimalt and Nanaimo Railway bridge: 40 miles from Nanaimo.

Records Available.—Gauge readings daily, May 21, 1914, to December 31, 1914.

Drainage Area.—Sixty-two square miles.

Gauge.—Eighteen-foot wooden staff, located on left bank about one hundred feet above Esquimalt and Nanaimo Railway bridge.

Channel.—Gravel bed, very even, straight run for 500 feet on both sides of section.

Discharge Measurements.—One in 1913 by Provincial Water Rights Branch; four in 1914, covering all but high stages.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 30 and 300 cu. feet per second, accuracy B. Above discharge of 300 cubic feet, per second, accuracy C.

Co-operation.—Gauge installed in 1913 by Provincial Water Rights Branch.

BIG QUALICUM RIVER (1032).

The Big Qualicum river rises in Horne lake at an elevation of 380 feet, and is about 6 miles in length. It flows in an easterly direction, with a fairly even fall, to its mouth in the strait of Georgia, about 40 miles north from Nanaimo. The drainage area, which covers 62 square miles, is thickly wooded, although some timber has been taken off. The stream is metered about one mile and a half from its mouth. The precipitation varies from 40 to 50 inches. Horne lake covers an area of about 4 square miles, affording good storage possibilities.

For a power development, considerable water would have to be stored in the lake, due to the low flow during the summer months. A long pipeline would be the only possible development on this stream for a fair sized plant.

The Esquimalt and Nanaimo railway and the Island highway both cross the stream near its mouth, and quite a few settlers have recently come into the district.

DISCHARGE MEASUREMENTS of Big Qualicum River 1½ miles from mouth, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharg
			Feet.	Sq.-ft	Ft per sec	Feet	Sec -ft
1914.							
May 21	Cotton & Webb	1,057	46	105·0	1·33	2·20	14
July 9	" "	1,057	44	51·3	1·39	1·80	71
Aug. 30	C. E. Webb	1,057	38	37·5	0·72	1·45	26
Dec 10	"	1,933	61	92·9	2·87	2·60	2

[1]Station established. Cable carrier installed at new section.

MONTHLY DISCHARGE of Big Qualicum River near mouth, for 1914.

(Drainage area, 62 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accurac
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June	140	100	114	1·84	2·05	6,780	B
July	100	40	59	0·95	1·10	3,630	B
August	40	30	31	0·50	0·58	1,910	B
September	120	30	55	0·89	0·99	3,270	B
October	1,660	80	572	9·22	10·63	35,200	C
November	1,310	420	730	11·77	13·14	43,400	C
December	690	100	229	3·70	4·27	14,100	C

DAILY GAUGE HEIGHT AND DISCHARGE of Big Qualicum River near mouth, fo 1914.

DAY.	May.		June.		July.		August.		September.		October.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	......	......	2·1	120	2·0	100	1·6	40	1·5	30	2·1	120
2	......	......	2·1	120	2·0	100	1·6	40	1·5	30	2·1	120
3	......	......	2·1	120	2·0	100	1·6	40	1·5	30	2·1	120
4	......	......	2·2	140	1·9	80	1·6	40	1·5	30	2·1	120
5	......	......	2·1	120	1·9	80	1·5	30	1·5	30	2·1	120
6	......	......	2·1	120	1·9	80	1·5	30	1·5	30	2·1	120
7	......	......	2·2	140	1·8	65	1·5	30	1·5	30	2·0	100
8	......	......	2·2	140	1·8	65	1·5	30	1·5	30	2·0	100
9	......	......	2·2	140	1·8	65	1·5	30	1·5	30	1·9	80
10	......	......	2·1	120	1·8	65	1·5	30	1·5	30	1·9	80
11	......	......	2·1	120	1·8	65	1·5	30	1·5	30	1·9	80
12	......	......	2·1	120	1·8	65	1·5	30	1·5	30	2·3	170
13	......	......	2·1	120	1·8	65	1·5	30	1·5	30	5·2	1,660
14	......	......	2·1	120	1·8	65	1·5	30	1·5	30	4·6	1,240
15	......	......	2·1	120	1·8	65	1·5	30	1·5	30	4·0	890
16	......	......	2·1	120	1·7	50	1·5	30	1·6	40	4·3	1,060
17	......	......	2·1	120	1·7	50	1·5	30	1·6	40	4·8	1,380
18	......	......	2·0	100	1·7	50	1·5	30	1·6	40	4·8	1,380
19	......	......	2·0	100	1·7	50	1·5	30	1·9	80	4·8	1,380
20	......	......	2·0	100	1·7	50	1·5	30	1·9	80	4·8	1,380
21	2·4	200	2·0	100	1·7	50	1·5	30	1·9	80	4·4	1,120
22	2·3	170	2·0	100	1·6	40	1·5	30	1·9	80	3·9	840
23	2·2	140	2·0	100	1·6	40	1·5	30	1·9	80	3·6	690
24	2·2	140	2·0	100	1·6	40	1·5	30	1·9	80	3·5	640
25	2·2	140	2·0	100	1·6	40	1·5	30	1·9	80	3·2	500
26	2·2	140	2·0	100	1·6	40	1·5	30	1·9	80	3·1	460
27	2·3	170	2·0	100	1·6	40	1·5	30	2·0	100	3·0	420
28	2·2	140	2·0	100	1·6	40	1·5	30	2·0	100	2·8	340
29	2·2	140	2·0	100	1·6	40	1·5	30	2·1	120	2·7	300
30	2·2	140	2·0	100	1·6	40	1·5	30	2·1	120	2·7	300
31	2·1	120	......	......	1·6	40	1·5	30	...	.	3·0	420

DAILY GAUGE HEIGHT AND DISCHARGE of Big Qualicum River near mouth for 1914—*Con.*

Day	November.		December	
	Gauge Height	Dis-charge	Gauge Height	Dis-char
	Feet.	Sec.-ft	Feet.	Sec
1	3·3	540	3·6	[illegible]
2	3·7	740	3·4	[illegible]
3	3·9	840	3·1	[illegible]
4	4·2	1,000	3·0	[illegible]
5	4·0	890	2·8	[illegible]
6	3·7	710	2·7	[illegible]
7	3·7	740	2·7	[illegible]
8	3·7	740	2·6	[illegible]
9	3·8	790	2·6	[illegible]
10	3·8	790	2·6	[illegible]
11	3·8	790	2·5	[illegible]
12	3·7	740	2·5	[illegible]
13	3·7	710	2·4	[illegible]
14	3·3	540	2·4	[illegible]
15	3·1	460	2·4	[illegible]
16	3·0	420	2·3	[illegible]
17	3·0	420	2·3	[illegible]
18	3·0	420	2·3	[illegible]
19	3·0	420	2·3	[illegible]
20	3·1	460	2·3	[illegible]
21	3·1	460	2·2	[illegible]
22	3·7	740	2·2	[illegible]
23	3·9	840	2·1	[illegible]
24	3·9	840	2·1	[illegible]
25	4·7	1,310	2·0	[illegible]
26	4·5	1,180	2·0	[illegible]
27	4·1	940	2·0	[illegible]
28	4·0	890	2·1	[illegible]
29	3·8	790	2·1	[illegible]
30	3·6	690	2·1	[illegible]
31			2·1	[illegible]

CAMPBELL RIVER, VANCOUVER ISLAND (1042).

Location.—At outlet from Campbell lake.

Records Available.—Gauge readings twice daily; June 2—December 31, 1914; Campbell River Power Company have also done work during 1913 and 1914.

Drainage Area.—Seven hundred and eighty square miles.

Gauge.—Twelve-foot enamel staff—in sections located 1,000 feet above measuring section.

Channel.—Gravel and boulder bed; channel straight for 300 feet above section; rapids 100 feet below.

Discharge Measurements.—Four in 1914 covering all stages.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 1,000 and 12,000 cubic feet per second accuracy B. above discharge 12,000 cubic feet per second, accuracy D.

CAMPBELL RIVER (1042).

Campbell river flows from Campbell lake to the sea in Discovery passa a distance of about 9 miles. It is the outlet of a chain of lakes which exte from the interior of the island amongst a large group of mountains. Butt lake at the upper end drains into Upper Campbell lake, which in turn drains into Campbell lake. The stream is metered at the outlet from Campbell lake, and the drainage area above the metering section is some 780 square miles. The precipitation is high, varying from 80 inches at mouth of river to 130 inches at headwaters. Due to the presence of snow and ice on the mountains, the flow in summer is kept up much better than the streams in the southern parts of the island. The altitude of Campbell lake is about 500 feet.

The river is fast, and the fall fairly even for about 2 miles from Campbell lake. The river then narrows in and falls about 20 feet. With rapids for a quarter of a mile below, it drops another 30 feet, and finally has a sheer fall of 90 feet over a solid rock cliff into a deep, narrow canyon. This makes a good location for a power development. A head of 140 feet may be obtained in less than half a mile.

Another development, which would greatly increase the head, would be a tunnel from McIvor lake to a point below the falls, a distance of approximately 2 miles. McIvor lake is about one-quarter of a mile below Campbell lake, and is practically a bay on the river. It is well situated for the storage of water but the grade of the government road, which runs along one side of this lake, would have to be raised.

The Government at present are constructing a road from the mouth of Campbell river to Strathcona park, which, when completed, will be one of the finest in the country.

The timber which lies in the drainage is excellent and practically none has been cut. There are few settlers at present except at the mouth where some very fine land is under cultivation.

The Campbell River Power Company hold water records on Campbell river, and it is believed they will develope power at the falls in the near future.

DISCHARGE MEASUREMENTS of Campbell River at Campbell Lake, 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
June 2	Cotton & Webb	1,057	180	1,170	4·1	2·95	4,750[1]
July 20	C. P. Cotton	1,057	210	1,250	3·8	3·13	4,710
Sept 6	C. E. Webb	1,057	95	362	2·7	0·32	977
Nov 13	"	1,057	240	2,000	6·1	6·58	12,200[2]

Station established. [2]Partly estimated.

MONTHLY DISCHARGE of Campbell River at Campbell Lake, for 1914.

Drainage area 780 square miles

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet	
	,960	3,990	5,410	6·94	7·74	322,000	B
	6,690	2,440	4,700	6·03	6·95	289,000	B
	2,370	1,300	1,980	2·54	2·93	122,000	B
ber	2,820	890	1,550	1·99	2·22	92,200	B
r	21,700	1,160	7,820	10·00	11·50	480,000	D
ber	17,690	4,440	10,330	13·25	14·70	615,000	D
ber	9,540	860	2,690	3·45	4·00	165,000	B

DAILY GAUGE HEIGHT AND DISCHARGE of Campbell River at Campbell Lak for 1914.

Day.	June.		July.		August.		September.		October.		November	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-char
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	...	4,500	3·4	5,330	1·42	2,300	0·58	1,250	1·35	2,200	4·6	[illegible]
2	2·95	4,570	3·65	5,800	1·4	2,270	0·5	1,160	1·37	2,230	5·07	[illegible]
3	3·2	4,990	3·85	6,200	1·4	2,270	0·45	1,100	1·27	2,100	5·33	[illegible]
4	3·45	5,420	4·05	6,600	1·4	2,270	0·43	1,080	1·1	1,880	5·67	[illegible]
5	3·35	5,250	4·08	6,660	1·4	2,270	0·4	1,050	0·98	1,730	5·65	[illegible]
6	3·15	4,900	4·02	6,540	1·4	2,270	0·35	990	0·87	1,600	5·33	[illegible]
7	2·9	4,490	3·82	6,140	1·42	2,300	0·30	940	0·8	1,510	4·8	[illegible]
8	2·75	4,250	3·58	5,660	1·48	2,370	0·30	940	0·75	1,450	4·75	[illegible]
9	2·63	4,060	3·35	5,250	1·4	2,270	0·30	940	0·62	1,290	7·15	[illegible]
10	2·58	3,990	3·2	4,990	1·4	2,270	0·25	890	0·52	1,180	8·57	[illegible]
11	2·58	3,990	3·13	4,870	1·48	2,370	0·25	890	0·5	1,160	8·55	[illegible]
12	2·68	4,150	3·08	4,790	1·45	2,340	0·25	890	0·6	1,270	7·62	[illegible]
13	2·92	4,520	3·08	4,790	1·4	2,270	0·25	890	2·25	3,480	6·83	[illegible]
14	3·2	4,990	3·22	5,030	1·4	2,270	0·25	890	5·5	9,650	4·82	[illegible]
15	3·68	5,860	3·25	5,070	1·4	2,270	0·25	890	6·98	13,300	4·37	[illegible]
16	4·1	6,700	3·23	5.050	1·4	2,270	0·3	940	9·17	19,000	4·07	[illegible]
17	4·52	7,540	3·2	4,990	1·33	2,180	0·4	1,050	9·77	21,000	3·45	[illegible]
18	4·72	7,960	3·13	4,870	1·23	2,050	0·7	1,390	10·02	21,700	3·0	[illegible]
19	4·72	7,960	3·13	4,870	1·13	1,910	1·08	1,850	9·62	20,600	2·87	[illegible]
20	4·57	7,650	3·12	4,850	1·08	1,850	1·4	2,270	8·93	18,700	3·1	[illegible]
21	4·3	7,100	3·05	4,740	1·0	1,750	1·62	2,570	8·35	17,000	3·47	[illegible]
22	3·92	6,340	2·85	4,410	0·95	1,690	1·8	2,820	7·4	14,400	4·22	[illegible]
23	3·58	5,660	2·62	4,040	0·93	1,660	1·8	2,820	6·5	12,100	5·07	[illegible]
24	3·15	4,900	2·35	3,620	0·9	1,630	1·73	2,720	5·6	9,870	5·9	[illegible]
25	3·17	4,930	2·23	3,450	0·85	1,570	1·53	2,440	5·05	8,660	7·05	[illegible]
26	3·22	5,030	2·12	3,280	0·83	1,540	1·37	2,230	4·45	7,400	8·32	[illegible]
27	3·30	5,160	2·02	3,130	0·8	1,510	1·3	2,140	3·65	5,800	8·37	[illegible]
28	3·30	5,160	1·93	3,000	0·75	1,450	1·25	2,080	3·38	5,300	7·92	[illegible]
29	3·25	5,080	1·78	2,790	0·72	1,420	1·3	2,140	2·9	4,490	7·12	[illegible]
30	3·28	5,130	1·65	2,610	0·7	1,390	1·35	2,200	2·82	4,360	6·22	[illegible]
31			1·53	2,440	0·63	1,300	...	....	3·6	5,700		

DAILY GAUGE HEIGHT AND DISCHARGE of Campbell River at Campbell Lake, for 1914—*Con.*

Day	December Gauge Height	December Discharge
	Feet	Sec.-ft.
1	5.45	9,540
2	4.82	8,170
3	4.35	7,200
4	3.87	6,240
5	3.15	4,910
6	2.75	4,250
7	2.55	3,930
8	2.35	3,620
9	2.17	3,350
10	1.95	3,030
11	1.7	2,680
12	1.5	2,400
13	1.22	2,040
14	1.3	2,140
15	1.0	1,750
16	0.9	1,630
17	0.82	1,530
18	0.73	1,430
19	0.62	1,290
20	0.55	1,210
21	0.5	1,160
22	0.45	1,110
23	0.4	1,050
24	0.4	1,050
25	0.35	1,000
26	0.35	1,000
27	0.35	1,000
28	0.3	940
29	0.22	860
30	0.27	910
31	0.37	1,010

CHEMAINUS RIVER (1027).

Location.—Upstream side of Esquimalt and Nanaimo Railway bridge, except for low water stage.

Records Available.—Gauge readings daily, May 13 to December 31, 1914.

Drainage Area.—One hundred and twenty square miles.

Gauge.—Eighteen-foot wooden staff located on left bank 100 feet below railway bridge.

Channel.—Straight for 50 feet above and 300 feet below section; gravel and sand bed.

Discharge Measurements.—Six in 1914 covering all but high stage; one in 1911 and one in 1913 by Provincial Water Rights Branch.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 10 and 600 cubic feet per second, accuracy A. Between discharge of 600 and 2,000 cubic feet per second, accuracy B. Above discharge of 2,000 cubic feet per second accuracy C.

Co-operation.—Provincial Water Rights Branch installed gauge in 1911.

CHEMAINUS RIVER (1027).

Chemainus river rises in the mountains to the north of Cowichan lake, at an altitude of between four and five thousand feet. It is approximately 30 miles in length, and flows in an easterly direction to its mouth at the sea in Stuart channel.

The drainage area is 120 square miles. The precipitation varies from about 30 inches at mouth to 20 inches in the mountains at source. There are no lakes to control the flow of Chemainus river. The upper reaches of the drainage area are mostly solid rock, hence the stream is very flashy. This is specially noticeable in the fall when warm rains often cause the river to rise several feet in a few hours. The flow data on this stream is of particular importance in the construction of bridges to span it. The stream, being flashy, has a very low flow during most of the summer months.

In the vicinity of the lower part of Chemainus river, the soil is very rich and is practically all under cultivation. This district is especially noted for its dairy products.

DISCHARGE MEASUREMENTS of Chemainus River at E. & N. Ry. Bridge, 1914

Date.	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity	Gauge Height	Disch.
1914			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.
May 13	C. E. Webb	1,057	107	530	1·1	3·79	5
July 6	Cotton and Webb	1,057	94	402	0·2	2·58	
July 6	"	1,057	41	37	2·4	2·58	
Aug. 11	C. P. Cotton	1,057	30	19	1·4	2·16	
Aug. 28	C. E. Webb	1,057	31	16	1·0	2·03	
Nov. 26	"	1,933	122	711	2·7	5·20	1.

[1]Station established. [2]Several sections used. [3]Good measurement

MONTHLY DISCHARGE of Chemainus River near mouth, for 1914.

(Drainage area, 120 square miles.

MONTH	DISCHARGE IN SECOND-FEET.				RUN-OFF		Accu
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre-feet	
June	340	140	200	1·67	1·86	11,900	
July	140	35	75	0·62	0·72	4,600	
August	35	15	25	0·21	0·24	1,500	
September	460	14	110	0·92	1·03	6,500	
October	5,850	120	1,320	11·00	12·68	81,200	
November	4,560	520	2,200	18·33	20·45	131,000	
December.	1,760	190	435	3·62	4·17	26,700	

DAILY GAUGE HEIGHT AND DISCHARGE of Chemainus River near mouth, for 1914.

Day	May		June		July		August		September		October	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	15	[illegible]	190
2			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	15	3.38	330
3			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14	3.2	290
4			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14	3.1	220
5			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14	2.9	180
6			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14	2.85	160
7			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	150
8			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	120
9			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		140
10			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2.9	180
11			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2.24	[illegible]	[illegible]	150
12			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.35	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2.24	[illegible]	[illegible]	5,050
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.55	[illegible]
15	[illegible]	74	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.75	[illegible]
16	[illegible]	44	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.47	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5,310
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.25	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,920
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17	4.62	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	140	4.3	900
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.1	740
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	500
26	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.6	430
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.40	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	330
29			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	300
30	3.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	3.6	430
31	3.17	24			[illegible]	[illegible]	[illegible]	[illegible]			4.49	1,070

DAILY GAUGE HEIGHT AND DISCHARGE of Chemainus River near mouth, for 1914—*Con.*

Day	November Gauge Height	November Discharge	December Gauge Height	December Dis-char
	Feet	Sec.-ft.	Feet	Sec
1	7.28	4,500	5.10	
2	6.93	4,140	4.76	
3		4,000	4.54	
4	6.80	3,940	4.33	
5	5.4	2,120	4.1	
6	5.1	1,760	3.94	
7	5.9	2,700	3.8	
8	5.65	2,450	3.76	
9	5.45	2,190	3.72	
10	5.0	1,640		
11	5.82	2,660	3.5	
12	5.0	1,640	3.44	
13	4.8	1,400	3.4	
14	4.55	1,130	3.34	
15	4.3	900	3.28	
16	4.04	680	3.18	
17	3.8	540	3.1	
18	3.76	520	3.0	
19	4.08	720	3.0	
20	6.1	3,020	3.0	
21	5.6	2,380	3.0	
22	5.2	1,880	3.0	
23	6.8	3,910	3.0	
24	7.06	4,270	3.0	
25	5.98	2,880	3.0	
26	5.3	2,000	3.0	
27	5.07	1,720	3.0	
28	4.85	1,460	3.0	
29	4.64	1,220	3.0	
30	4.7	1,280	3.05	
31			3.42	

COWICHAN RIVER (1054).

Location.—Near outlet from Cowichan lake, 1,000 feet below Canad
Northern Pacific Railway bridge.

Records Available.—Gauge readings twice daily, January 31, 1913, to D
ember 31, 1913, Provincial Water Rights Branch; January 1, 1914, to Decem
31, 1914.

Drainage Area.—Two hundred and thirty-five square miles.

Gauge.—Twelve-foot wooden staff, nailed to sixth bent on left down str
side of [illegible] bridge.

Channel.—Gravel and small boulder bed, channel straight 300 feet al
and 100 feet below section, one channel at all stages.

Discharge Measurements.—Four in 1914, covering all but highest st
five in [illegible] by Provincial Water Rights Branch.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 40 and 1,200 cubic feet per second, accu
Above discharge of 1,200 cubic feet per second, accuracy B.

Co-operation.—Provincial Water Rights Branch established station in 1

COWICHAN RIVER (1054).

Cowichan river rises in Cowichan lake at an altitude of 550 feet. It flows in an easterly direction for 20 miles to the sea in Cowichan bay. The drainage area of Cowichan river is 235 square miles above the metering section, which is located near the outlet from lake. Cowichan lake covers an area of 24 square miles, and is fed by many mountain streams. The precipitation is between 60 and 80 inches.

There are falls on this stream about 10 miles from its mouth from which a fair sized development might be obtained, but in 1914 the river was reserved by the Provincial Government for the preservation of the fish. Near Cowichan lake the Government has a fish hatchery which has been most successful in stocking the river with trout.

The timber in this drainage is exceptionally fine.

The Esquimalt and Nanaimo Railway have a branch line to Cowichan lake from Duncan and the Canadian Northern railway is under construction around the lake. Timber at present is towed by tugs to the railway from different parts of the lake.

DISCHARGE MEASUREMENTS of Cowichan River near Cowichan Lake, 1914.

Date	Hydrographer	Meter No.	[illegible]	Area of Section	Mean Velocity	Gauge Height	Discharge
1914			Feet				
[illegible] 24	C[illegible]n & W[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	667[illegible]
[illegible]	C. L. W[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	117
[illegible]	Do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	115[illegible]
[illegible]	Do	[illegible]	[illegible]	[illegible]	[illegible]	6.2[illegible]	4 [illegible]

[illegible]
[illegible]

MONTHLY DISCHARGE of Cowichan River at Cowichan lake, for 1914.

(Drainage area, 235 square miles.)

Month	Discharge in Second-feet				Run-off		Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	B
[illegible]	[illegible]	1 5[illegible]	[illegible]	[illegible]	[illegible]	118 000	B
[illegible]	4 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12.9	157 [illegible]	B
[illegible]	2 [illegible]	[illegible]	1 [illegible]	[illegible]	[illegible]	[illegible]	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.5[illegible]	44 000	A
[illegible]	[illegible]	2[illegible]	41[illegible]	[illegible]	2.[illegible]	25 [illegible]	A
[illegible]	2[illegible]	[illegible]	15[illegible]	[illegible]	[illegible]	9 220	A
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1[illegible] 400	A
[illegible]	[illegible]	[illegible]	2 [illegible]	[illegible]	14.2[illegible]	17[illegible] 000	B
[illegible]	8 30[illegible]	3 [illegible]	4 [illegible]	[illegible]	23.[illegible]	292 000	B
[illegible]	4 160	1 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	129.[illegible]	1 617 52[illegible]	B

DAILY GAUGE HEIGHT AND DISCHARGE of Cowichan River at Cowichan lake for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height.	Dis-charge	Gauge Height	D. charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec
1	4·2	2,150	5·7	3,680	5·45	3,380	4·3	2,240	4·1	2,060	2·5	900
2	4·7	2,600	5·4	3,330	5·85	3,860	4·2	2,150	4·05	2,020	2·5	900
3	5·1	3,000	5·15	3,050	6·05	4,100	4·2	2,150	4·0	1,960	2·45	870
4	6·2	4,290	4·85	2,750	6·1	4,160	4·4	2,330	3·9	1,900	2·45	870
5	7·5	6,080	4·7	2,600	6·0	4,040	4·6	2,510	3·8	1,820	2·4	840
6	9·8	9,600	4·55	2,460	5·85	3,860	4·65	2,960	3·7	1,740	2·35	810
7	10·0	10,000	4·4	2,330	5·7	3,680	4·6	2,510	3·6	1,660	2·45	870
8	9·7	9,500	4·3	2,240	5·6	3,560	4·55	2,460		1,660	2·45	870
9	9·5	9,100	4·15	2,100	5·4	3,330	4·5	2,420		1,550	2·45	870
10	9·2	8,700	3·95	1,940	5·2	3,110	4·45	2,370	3·45	1,530	2·4	840
11	9·0	8,400	3·8	1,820	5·1	3,000	4·4	2,330	3·4	1,500	2·35	810
12	8·7	7,950	3·75	1,780	5·0	2,900	4·35	2,280	3·3	1,430	2·35	810
13	8·4	7,480	3·7	1,740	5·2	3,110	4·45	2,370	3·3	1,400	2·3	780
14	8·1	7,000	3·75	1,780	5·75	3,740	4·75	2,650	3·2[illegible]	1,360	2·3	780
15	8·0	6,860	3·7	1,740	5·85	3,860	5·0	2,900	3·6	1,660	2·3	780
16	7·7	6,380	3·65	1,700	5·95	3,980	5·2	3,110	3·5	1,580	2·25	750
17	7·45	6,000	3·6	1,660	5·9	3,920	5·2	3,110	3·05	1,250	2·25	750
18	7·2	5,640	3·55	1,620	5·85	3,860	5·25	3,160	3·0	1,220	2·2	720
19	7·05	5,430	3·5	1,580	5·75	3,740	5·35	3,270	2·9	1,150	2·15	700
20	6·9	5,220	3·45	1,540	5·7	3,680	5·4	3,330	2·85	1,120	2·1	670
21	6·6	4,810	3·6	1,660	5·65	3,620	5·3	3,220	2·8	1,080	2·15	700
22	6·3	4,420	3·6	1,660	5·55	3,500	5·2	3,110	3·15	1,320	2·1	670
23	6·15	4,230	3·75	1,780	5·45	3,380	5·0	2,900	3·1	1,290	2·1	670
24	5·8	3,800	3·9	1,900	5·35	3,270	4·9	2,800	2·[illegible]	990	2·1	670
25	5·7	3,680	4·05	2,020	5·15	3,050	4·8	2,700	2·7	1,020	2·05	650
26	5·9	3,920	4·1	2,060	5·0	2,900	4·6	2,510	2·7	1,020	2·05	650
27	6·0	4,040	4·6	2,510	4·85	2,750	4·55	2,460	2·7	1,020	2·05	650
28	5·8	3,800	4·8	2,700	4·7	2,600	4·4	2,330	2·65	990	2·0	620
29	5·85	3,860	....	......	4·6	2,510	4·3	2,240	2·6	960	2·0	620
30	6·35	4,485			4·5	2,420	4·2	2,150	2·55	930	1·95	600
31	6·1	4,160		...	4·4	2,330	....	.....	2·5	900	...	

Daily Gauge Height and Discharge of Cowichan River at Cowichan lake, for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec -ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.
1	1·95	600	1·1	240	0·60	60	1·5	400	6·2	4,290	6·1	4,160
2 ..	1·95	600	1·05	220	0·60	60	1·6	440	6·8	5,080	5·9	3,920
3	1·9	570	1·05	220	0·60	60	1·6	440	7·2	5,640	5·7	3,680
4	1·9	570	1·0	200	0·60	60	1·6	440	7·65	6,300	5·5	3,440
5	1·83	530	1·0	200	0·60	60	1·6	440	7·65	6,300	5·3	3,220
6	1·8	520	1·0	200	0·55	50	1·6	440	7·5	6,080	5·3	3,220
7	1·8	520	1·0	200	0·55	50	1·6	440	7·4	5,930	5·2	3,110
8	1·75	500	1·0	200	0·6	60	1·6	440	7·35	5,850	5·0	2,900
9	1·75	500	1·0	200	0·6	60	1·6	440	7·45	6,000	4·9	2,800
10	1·7	480	0·98	190	0·6	60	1·6	440	7·4	5,930	4·8	2,700
11	1·67	470	0·95	180	0·6	60	1·6	440	7·4	5,930	4·7	2,600
12	1·65	460	0·95	180	0·6	60	1·75	500	7·4	5,930	4·7	2,600
13	1·6	440	0·9	160	0·6	60	3·60	1,660	7·05	5,430	4·6	2,500
14	1·6	440	0·9	160	0·6	60	4·3	2,240	6·8	5,080	4·5	2,420
15	1·55	420	0·9	160	0·62	65	4·65	2,560	6·5	4,680	4·3	2,240
16	1·5	400	0·9	160	0·8	120	4·9	2,800	6·25	4,350	4·1	2,060
17	1·5	400	0·85	140	1·0	200	5·7	3,680	6·2	4,290	4·0	1,980
18	1·45	380	0·85	140	1·10	240	6·6	4,800	6·0	4,040	3·9	1,900
19	1·45	380	0·85	140	1·2	280	7·65	6,300	5·8	3,800	3·8	1,820
20	1·4	360	0·85	140	1·3	320	8·2	7,170	6·0	4,040	3·6	1,660
21	1·4	360	0·8	120	1·25	300	8·05	6,940	6·0	4,040	3·5	1,580
22	1·35	340	0·8	120	1·2	280	7·85	6,620	6·1	4,160	3·4	1,500
23	1·35	340	0·8	120	1·2	280	7·4	5,930	6·1	4,160	3·3	1,430
24	1·3	320	0·75	100	1·2	280	7·3	5,780	6·0	4,040	3·3	1,430
25 ..	1·3	320	0·75	100	1·2	280	6·8	5,080	6·2	4,290	3·2	1,360
26	1·25	300	0·7	80	1·2	280	6·15	4,220	6·2	4,290	3·1	1,290
27	1·25	300	0·7	80	1·3	320	5·85	3,860	6·2	4,290	3·0	1,220
28	1·2	280	0·7	80	1·4	360	5·7	3,680	6·2	4,290	2·9	1,150
29	1·15	260	0·65	70	1·5	400	5·6	3,560	6·2	4,290	2·8	1,080
30	1·15	260	0·65	70	1·5	400	5·7	3,680	6·2	4,290	2·9	1,150
31 ..	1·1	240	0·65	70	....	....	5·95	3,980	......	....	2·8	1,080

Englishman River (1030).

Location.—One-half mile from mouth : 1,000 feet upstream from Island Highway bridge; 2 miles from Parksville.

Records available.—Gauge readings daily: February 15, 1913, to December 31, 1913, Provincial Water Rights Branch; May 19, 1914, to September 21, 1914; December 9, 1914, to December 31, 1914.

Drainage area.—One hundred and eleven square miles.

Gauge.—Twelve feet of enamel staff, in two 6 foot lengths, located on right bank, 100 feet upstream from measuring section.

Channel.—Even gravel bed, channel straight for 500 feet above and below section, one channel at all stages.

Discharge measurements.—Five in 1914, covering low and medium stages; four in 1913, Provincial Water Rights Branch.

Winter flow.—Open all winter.

Accuracy.—Between discharge of 20 and 400 cubic feet per second, accuracy B. Above discharge of 400 cubic feet per second, accuracy C.

Co-operation.—Provincial Water Rights Branch established station in 1913.

ENGLISHMAN RIVER (1030).

Englishman river is approximately 20 miles in length. It rises in the mountains at an elevation of some 5,000 feet, and flows in an easterly direction to its mouth in the straits of Georgia near the town of Parksville. The precipitation varies from about 30 inches at mouth to 60 inches in mountains. Having no natural storage, this stream is very flashy. During the summer months the flow is generally small. If artificial storage could be obtained at a reasonable expense, a small development might be made at falls.

The Giant Powder Co., which is located at Powder point, a short distance from the mouth of Englishman river, made surveys in 1912 and 1913 in view of developing power for their works, but gave up the project.

The Esquimalt and Nanaimo railway and the Government highway both cross this stream near its mouth. The district has many settlers, several of whom obtain their domestic supply from the river. The town of Parksville is on the Government highway about 2 miles distant.

The gauging station on Englishman river is located about one-half mile from mouth.

DISCHARGE MEASUREMENT of Englishman River near mouth, for 1914.

Date	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Dischar
			Feet.	Sq ft	Ft. per sec.	Feet.	Sec f
1914.							
May 19	Cotton & Webb	1057	129	160	1·9	2·50	304
July 19	do	1057	110	156	0·8	2·00	12
Aug. 29	C. E. Webb.	1057	26	16	1·5	1·47	2
Aug. 29	do	1057	106	110	0·2	1·47	1
Dec. 10	do	1933	114	227	1·2	2·50	2

[1] Station established.
[2] Cable carrier established.
[3] Low water section.

MONTHLY DISCHARGE of Englishman River at mouth, for 1914.

(Drainage area, 111 square miles.)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF.		
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet	Ac
June	320	220	254	2·29	2·56	5,100	
July	220	48	103	0·93	1·07	6,330	
August	48	13	37	0·33	0·38	2,280	

DAILY GAUGE HEIGHT AND DISCHARGE of Englishman River near mouth, for 1914.

Day	May		June		July		August.		September.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1			2.3	220	[illegible]	[illegible]	1.6	48	1.4	[illegible]		
2			2.4	250	2	22	1.6	48	1.4	[illegible]		
3			2.4	250	[illegible]	19	1.6	48	1.4	13		
4			2.5	280	2.2	[illegible]	1.[illegible]	48	[illegible]	5		
5			2.5	280	2.1	[illegible]	1.[illegible]	48	[illegible]	5		
6			2.4	[illegible]	[illegible]		1.6	48	[illegible]	[illegible]		
7			2.4	[illegible]	[illegible]	[illegible]	1.6	48		5		
8			2.5	[illegible]	[illegible]	[illegible]	1.6	48	1.[illegible]	5		
9			2.5	[illegible]	1.9	[illegible]	1.6	48	[illegible]	5	2.6	320
10			2.4	[illegible]			[illegible]	[illegible]	1.5	28	2.5	280
11			[illegible]	[illegible]	[illegible]	[illegible]	1.6	48	1.5	28	2.4	250
12			[illegible]	[illegible]	[illegible]	[illegible]	1.6	48	1.5	28	2.35	235
13			[illegible]	[illegible]	[illegible]	[illegible]	1.6	48	1.6	48	2.3	220
14			[illegible]	[illegible]	[illegible]	[illegible]	1.6	48	1.7	68	2.25	205
15			[illegible]	[illegible]	[illegible]	[illegible]	1.5	28	1.7	[illegible]	2.2	190
16			[illegible]	[illegible]	[illegible]	[illegible]	1.[illegible]	[illegible]	1.7	68	2.15	175
17			[illegible]	[illegible]	[illegible]	[illegible]	1.[illegible]	[illegible]	1.7	68	2.15	175
18			[illegible]	[illegible]	[illegible]	[illegible]	1.[illegible]	[illegible]	[illegible]	[illegible]	2.2	190
19	2.5	280	[illegible]	[illegible]	[illegible]	[illegible]	1.[illegible]	[illegible]	[illegible]	[illegible]	2.15	175
20	2.6	320	2.5	[illegible]	1.7	78	1.7	28	2.11	165	2.1	160
21	2.7	360	2.5	280	1.7	68	1.5	28	2.1	160	2.1	160
22	2.8	400	2.4	250	1.7	68	1.[illegible]	28			2.1	160
23	2.8	400	2.4	250	1.7	68	1.[illegible]	28			2.05	145
24	2.9	440	2.4	250	1.7	68	1.5	28			2.05	145
25	2.6	320	2.4	250	1.7	68	1.[illegible]	28			2.05	145
26	2.6	320	2.3	220	1.7	68	1.5	28			2.1	160
27	2.6	320	2.3	220	1.6	48	1.[illegible]	28			2.1	160
28	2.5	280	2.3	220	1.6	48	1.6	48			2.15	175
29	2.2	190	2.3	220	1.6	48	1.4	1[illegible]			2.15	175
30	2.2	190	2.[illegible]	220	1.6	48	1.4	1[illegible]			2.5	280
31	2.3	220			1.[illegible]	48	1.6	48			2.6	320

HASLAM CREEK (1029).

Location.—Low-water section, 500 feet below Canadian Collieries railway bridge; 6 miles from Ladysmith.

High-water section, downstream side of bridge.

Records available.—Gauge readings twice a week. July 3, 1914, to December 31, 1914.

Drainage area.—Twenty-seven square miles.

Gauge.—Six-foot enamel staff, on piling of railway bridge, downstream side [illegible] r left bank.

Channel.—Low-water section, gravel bed, channel straight 50 feet above nd below section, banks overflow in extreme high water.

High-water section, stream flows at small angle to bridge, bed of stream is ravel.

Discharge measurements.—Four in 1914, covering all but high stage; one 1913, Provincial Water Rights Branch.

Winter flow.—Open all year.

Accuracy.—Between discharge of 0 and 160 cubic feet per second, accuracy Above discharge of 160 cubic feet per second, accuracy C.

Co-operation.—Provincial Water Rights Branch installed gauge in 1913.

HASLAM CREEK (1029).

Haslam creek is part of the Nanaimo river drainage. It rises in the mountains between the Chemainus and Nanaimo rivers at an elevation of about 4,000 feet. The metering section is located at the Canadian Collieries railway bridge, about 2 miles above mouth of creek. The drainage area, above metering section, is 27 square miles. A large part of the drainage area is covered with second-growth timber.

The precipitation varies from 30 to 50 inches, being most in the higher altitudes. The stream has no natural storage and is flashy.

This stream is of little importance at present, except in effect of the total flow of Nanaimo river which it enters about 4 miles from the sea.

DISCHARGE MEASUREMENTS of Haslam Creek near Canadian Collieries railway bridge, for 1914.

Date	Hydrographer.	Meter. No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft
1914.							
May 14	C. E. Webb	1057	58	89	0·9	1·30	83·58
July 7	Cotton & Webb	1057	60	58	0·2	0·47	13·30
Aug. 10	C. P. Cotton	1057	62	43	0·1	0·20	4·70
Nov. 27	C. E. Webb	1933	170	238	2·1	2·20	473·00

MONTHLY DISCHARGE of Haslam Creek near mouth, for 1914.

(Drainage area, 27 square miles.).

Month.	Discharge in Second-Feet.				Run-Off.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.	
June	68	24	47	1·74	1·94	2,800	B
July	22	4	10	0·37	0·43	610	B
August	4	3	4	0·15	0·17	250	B
September	50	3	16	0·59	0·66	950	B
October	1,360	18	357	13·20	15·20	22,000	C
November	1,420	88	530	19·60	28·90	31,500	C
December	480	32	110	4·08	4·70	6,760	C

DAILY GAUGE HEIGHT AND DISCHARGE of Haslam Creek near mouth, for 1914.

Day.	May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1				68
2				66
3				63
4			1·1	60
5				60
6				60
7				60
8				60
9			1·1	60
10				60
11				60
12				60
13				60
14	1·3	88		60
15		88	1·1	60
16	1·3	88		54
17		88		48
18	1·3	88	0·9	40
19		84		38
20		78		37
21	1·2	72		35
22		72		33
23		72	0·8	32
24		72		31
25		72		28
26	1·2	72		26
27		72	0·7	24
28		72		24
29		72		24
30	1·2	72	0·7	24
31		72		

DAILY GAUGE HEIGHT AND DISCHARGE of Haslam Creek near mouth, for 191 —*Con.*

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	auge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	I char
	Feet.	Sec.-ft.	Feet.	Sec. ft.	Feet.	Sec. ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec
1		22		4		3		48		800		
2		20		4		3	1·1	60	3·8	1,420	2·2	
3	0·6	18	0·2	4		3		50		1,000		
4		17		4		3	0·9	40		800	1·9	
5		16	0·2	4	0·1	3		36	2·4	600		
6		15		4		3		30		560		
7	0·5	14	0·2	4	0·1	3	0·7	24		520		
8		12		4		3		22		480	1·3	
9	0·4	10		4		4		20		440		
10		10		4	0·2	4	0·6	18	2·1	420		
11	0·4	10	0·2	4		4	0·6	18		420	1·2	
12		10		4		4		500	2·1	420		
13		10	0·2	4		4	3·3	1,130		420		
14	0·4	10		4		4		700		300		
15		10	0·2	4	0·2	4	1·9	300		200		
16	0·4	10		4		14		700		100	1·0	
17		8		3		23	3·2	1,070	1·3	88		
18	0·3	6	0·1	3	0·8	32		1,150		280		
19		6		3		41	3·7	1,360	2·2	480	0·9	
20	0·3	6		3	1·0	50		1,300		500		
21		6	0·1	3		40		800		600		
22	0·3	6		3		32		400		700	0·9	
23		6		3	0·7	24		200	2·7	770		
24		6	0·1	3		19		150		650	0·8	
25	0·3	6		3	0·5	14		100		550		
26		6		3		20	1·2	72	2·2	480		
27	0·3	6	0·1	3		24		64		480		
28		5		3		28		56		480		
29	0·2	4	0·1	3	0·8	32	1·0	50		480	0·8	
30		4		3	0·8	32		100		480		
31	0·2	4		3				500			1·1	

KOKSILAH RIVER (1026).

Location.—Two miles from mouth, upstream side of Esquimalt and Nana railway bridge, 2 miles south from Duncan.

Records available.—Gauge readings daily, May 12, 1914, to December 1914.

Drainage area.—One hundred and twenty-four square miles.

Gauge.—Fourteen foot staff on left bank, 600 feet above bridge.

Channel.—Gravel bed, two channels in low water, channel straight for feet above section and for 300 feet below, good control.

Discharge measurements.—Six in 1914, covering all but highest stage in 1911 and one in 1913, by Provincial Water Rights Branch.

Winter flow.—Open all year.

Accuracy.—B.

Co-operation.—Provincial Water Rights Branch installed gauge in 1911

KOKSILAH RIVER (1026).

Koksilah river rises in the mountains at an altitude of about 3,000 and flows in an easterly direction to the sea, in Cowichan bay. It is app mately 20 miles in length, and has a drainage area of 124 square miles a gauging station. The gauging station is located about 2 miles from mouth. The precipitation varies from 30 inches at mouth to about 70 inches at head-waters. There is no natural storage on this stream, and hence its flow is very irregular. In the summer months the flow is small.

There are some very fine farms in this district. The town of Duncan is located about 2 miles from Koksilah river on the Esquimalt and Nanaimo railway.

DISCHARGE MEASUREMENTS of Koksilah River near E. & N. Ry. bridge, for 1914.

Date		Hydrographer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914				Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May	12	C. E. Webb	1057	95	87	1·3	1·73	110·0[1]
July	5	Webb & Cotton	1057	34	18	1·8	1·23	33·9[2]
Aug	12	C. P. Cotton	1057	71	94	0·2	1·00	14·4
"	12	do	1057	37	14	1·1	1·45	16·2
"	27	C. E. Webb	1057	40	12	0·9	1·00	10·1
Nov	25	do	1933	122	462	3·6	4·92	1,650·0

[1] Station established.

[2] Different sections used.

MONTHLY DISCHARGE of Koksilah River near mouth, for 1914.

(Drainage area, 124 square miles.)

Month	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
1914.						
July	140	40	59	0·48	0·54	3,500
August	58	25	28	0·23	0·27	1,720
September	25	10	14	0·11	0·13	860
October	115	10	40	0·32	0·36	2,380
November	2,220	40	375	3·03	3·49	23,100
December	2,310	200	780	6·28	7·01	46,400
	790	115	280	2·26	2·61	17,200

Accuracy "B".

DAILY GAUGE HEIGHT AND DISCHARGE of Koksilah River near mouth, for 1914.

DAY.	May.		June.		July.		August.		September.		October	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1·4	50	1·28	38	1·15	25	1·0	10	1·4	50
2			1·4	50	1·25	35	1·15	25	1·0	10	1·4	50
3			1·4	50	1·23	33	1·12	22	1·0	10	1·4	50
4			1·38	48	1·23	33	1·1	20	1·0	10	1·4	50
5			1·35	45	1·2	30	1·1	20	1·0	10	1·37	47
6			1·32	42	1·2	30	1·08	18	1·0	10	1·35	45
7			1·4	50	1·2	30	1·08	18	1·05	15	1·35	45
8			1·7	115	1·2	30	1·08	18	1·1	20	1·35	45
9			1·8	140	1·2	30	1·08	18	1·15	25	1·32	42
10			1·7	115	1·2	30	1·05	15	1·2	30	1·3	40
11			1·6	90	1·2	30	1·05	15	1·15	25	1·4	[illegible]
12	1·7	115	1·5	70	1·2	30	1·05	15	1·1	20	1·6	90
13	1·7	115	1·5	70	1·2	30	1·05	15	1·2	30	1·7	115
14	1·65	105	1·5	70	1·2	30	1·05	15	1·4	50	1·9	165
15	1·63	100	1·4[illegible]	65	1·18	28	1·05	15	1·6	90	2·0	190
16	1·6	90	1·45	60	1·15	25	1·0	10	1·7	115	2·4	290
17	1·6	90	1·4	50	1·15	25	1·0	10	1·7	115	3·0	500
18	1·57	85	1·4	50	1·15	25	1·0	10	1·5	70	4·0	1,000
19	1·55	80	1·4	50	1·15	25	1·0	10	1·5	70	5·5	2,220
20	1·52	75	1·4	50	1·15	25	1·0	10	1·4[illegible]	60	4·5	1,320
21	1·5	70	1·37	47	1·15	25	1·0	10	1·4	50	3·6	700
22	1·45	60	1·35	45	1·15	25	1·0	10	1·3	40	3·0	500
23	1·4	50	1·35	45	1·15	25	1·0	10	1·3	40	2·8	420
24	1·4	50	1·35	45	1·15	25	1·0	10	1·3	40	2·6	350
25	1·45	60	1·35	45	1·15	25	1·0	10	1·3	40	2·4	290
26	1·5	70	1·35	45	1·15	25	1·0	10	1·3	40	2·4	290
27	1·55	80	1·35	45	1·15	25	1·0	10	1·3	40	2·4	290
28	1·55	80	1·32	42	1·15	25	1·0	10	1·3	40	2·4	290
29	1·5	70	1·32	42	1·15	25	1·0	10	1·3	40	2·6	350
30	1·45	60	1·3	40	1·15	25	1·0	10	1·3[illegible]	45	2·7	[illegible]
31	1·43	55			1·15	25	1·0	10			4·4	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Koksilah River near mouth, for 1914. —*Con.*

Day.	November.		December	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet	Sec.-ft.	Feet	Sec.-ft.
1	4·8	1,560	3·4	690
2	5·5	2,220	3·6	790
3	5·6	2,310	3·4	690
4	5·3	2,020	3 2	590
5	3·0	500	3·0	500
6	3·0	500	2·9	460
7	2 9	460	2·7	380
8	3·3	640	2·6	350
9	4·0	1,000	2·5	320
10	4·6	1,400	2·4	290
11	4·0	1,000	2·4	290
12	3·3	640	2·3	265
13	3·0	500	2·2	240
14	2·8	420	2·1	215
15	2·6	350	2·0.	190
16	2·6	350	2·0	190
17	2·4	290	1·9	165
18	2·4	290	1·9	165
19	2·4	290	1·8	140
20	2·4	290	1·7	115
21	2·4	290	1·7	115
22	3·0	500	1·7	115
23	3·2	590	1·7	115
24	3·6	790	1·7	115
25	4·2	1,120	1·7	115
26	3·8	890	1·7	115
27	3·2	590	1·8	140
28	3·0	500	1·9	165
29	3·0	500	2·0	190
30	3·2	590	2·0	190
31			2·0	190

LITTLE QUALICUM RIVER (1031).

Location.—At outlet from Cameron lake, downstream side of highway bridge.

Records available.—Gauge readings daily, February 27, 1913, to December 31, 1913. Provincial Water Rights Branch, January 1, 1914, to December 31, 1914.

Drainage area.—Fifty-four square miles.

Gauge.—Twelve-foot wooden staff nailed to crib on shore of lake, 500 feet from head of river.

Channel.—Straight on both sides of section for 100 feet, gravel and small boulder bed, confined by bridge abutments in high water, one channel at all stages.

Discharge measurements.—Six in 1913 by Provincial Water Rights Branch, and five in 1914.

Winter flow.—Open all winter.

Accuracy.—Between discharge of 30 and 400 cubic feet per second, accuracy A. Below discharge of 30 and above 400 cubic feet per second, accuracy B.

Co-operation.—Station established by Provincial Water Rights Branch in 1913.

LITTLE QUALICUM RIVER (1031).

Little Qualicum river is approximately 6 miles in length. Rising in Cameron lake at an altitude of 600 feet, it flows in an easterly direction to its mouth in the strait of Georgia near Qualicum beach.

The drainage area above the metering section, which is located at the outlet from Cameron lake, is 54 square miles. The Cameron river, which flows into Cameron lake, is about 16 miles long and rises in Labour Day lake.

The precipitation varies from about 40 inches on the coast to 60 inches at the headwaters. Considerable snow falls in the mountains of this drainage.

There is a good location for a hydro-electric development on Little Qualicum river at the falls, about 3 miles below Cameron lake. At this point the river drops some 100 feet in a series of three falls into a solid rock box canyon.

Owing to the low flow during the summer months, it would be necessary to store water for that period. Cameron lake offers good storage possibilities but the grade of the government road around the south side of the lake would have to be raised, as at present it is not far above high water.

The district has been opened up considerably for settlement in the last few years. At Qualicum beach a considerable amount of capital has been invested clearing a large tract of land. A fine tourist hotel has been built near the sea. At Cameron lake the Canadian Pacific Railway Company have a delightful chalet for the accommodation of tourist traffic.

DISCHARGE MEASUREMENTS of Little Qualicum River near Cameron Lake, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Disch
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec
May 20	Webb & Cotton	1057	58	143	2·4	2·40	[illegible]
July 10	C. P. Cotton	1057	53	80	1·9	1·40	[illegible]
Sept. 1	C. E. Webb	1057	46	33	1·1	0·49	[illegible]
" 2	do	1057	46	32	1·0	0·47	[illegible]
Dec. 16	do	1933	58	116	2·3	2·05	[illegible]

[1] Station established

MONTHLY DISCHARGE of Little Qualicum River at Cameron Lake, for 1914

Drainage area, 54 square miles

Month.	DISCHARGE IN SECOND-FEET				RUN-OFF.	
	Maximum.	Minimum	Mean	Per square mile	Depth in inches on drainage area	Total in acre-feet
January	1,910	215	632	11·70	13·49	38,860
February	555	165	242	4·48	4·67	13,400
March	875	290	498	9·23	10·61	30,600
April	840	255	495	9·17	10·30	29,540
May	445	315	382	7·08	8·16	23,500
June	375	235	278	5·15	5·75	16,500
July	230	68	134	2·48	2·86	8,240
August	68	45	54	1·00	1·15	3,320
September	192	38	91	1·69	1·89	5,400
October	2,030	150	655	12·13	[illegible]	[illegible]
November	[illegible]	[illegible]	824	15·25	17·02	49,000
December	650	130	259	4·80	5·53	16,000
The year	2,030	38	379	7·01	95·45	274,600

DAILY GAUGE HEIGHT AND DISCHARGE of Little Qualicum River at Cameron lake, for 1914.

Day.	January		February		March		April		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft.
1	1·79	215	2·3	315	4·02	735	2·07	270	2·69	400	2·28	310
2	1·88	230	2·25	305	4·41	855	2·0	255	2·86	440	2·30	315
3	2·34	325	2·19	295	4·12	765	2·0	255	2·89	445	2·28	310
4	4·33	830	2·11	275	3·87	690	2·15	285	2·89	445	2·3	315
5	6·71	1,600	2·06	265	3·54	595	3·1	490	2·84	430	2·28	310
6	7·51	1,910	1·99	255	3·20	510	3·27	510	2·61	375	2·2	295
7	6·79	1,630	1·89	235	3·03	475	3·16	505	2·69	400	2·6	375
8	5·75	1,270	1·82	220	2·79	420	3·0	470	2·6	375	2·18	285
9	4·85	985	1·73	205	2·66	390	2·89	445	2·64	385	2·12	280
10	4·26	810	1·69	200	2·56	365	2·83	425	2·62	380	2·14	285
11	4·11	765	1·63	190	2·46	345	2·8	420	2·68	395	2·09	275
12	4·47	870	1·59	185	2·4	335	2·8	420	2·68	395	2·08	270
13	4·26	810	1·57	180	2·49	355	2·86	430	2·68	395	2·08	270
14	3·99	730	1·51	170	2·73	410	3·84	690	2·7	400	2·16	285
15	3·67	630	1·5	170	4·09	755	4·36	840	2·73	405	2·18	290
16	3·44	570	1·49	170	3·85	685	4·29	820	2·69	400	2·18	290
17	3·23	520	1·48	165	3·62	645	3·95	715	2·6	375	2·17	285
18	3·60	610	1·48	165	3·44	570	3·68	645	2·51	355	2·11	275
19	2·94	455	1·48	165	3·3	535	3·95	715	2·48	[illegible]	2·09	270
20	2·8	420	1·48	165	3·3	535	4·02	735	2·46	345	2·08	270
21	2·66	390	1·56	180	3·3	535	3·8	670	2·48	350	1·98	250
22	2·55	365	1·73	205	3·3	535	3·39	560	2·55	365	1·99	255
23	2·41	335	1·88	230	3·23	520	3·08	485	2·59	375	1·99	255
24	2·3	315	2·07	270	2·97	465	2·93	450	2·66	390	1·98	230
25	2·23	300	2·17	290	2·89	445	2·73	405	2·65	385	1·98	250
26	2·17	290	2·28	310	2·72	405	2·57	370	2·71	400	1·98	250
27	2·08	270	2·97	465	2·55	365	2·61	380	2·63	380	1·98	250
28	2·0	255	3·29	535	2·44	345	2·69	400	2·5	355	1·96	245
29	2·05	265			2·28	310	2·68	395	2·43	340	1·89	235
30	2·23	300			2·23	300	2·68	395	2·3	315	1·89	235
31	2·3	315	..		2·17	290			2·29	315		

DAILY GAUGE HEIGHT AND DISCHARGE of Little Qualicum River at Cameron lake, for 1914—*Con.*

DAY.	July		August		September		October.		November		Decemb	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Di ch
	Feet	Sec. ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Se
1	1·88	230	0·78	68	0·54	44	1·82	220	3·48	580	3·74	
2	1·81	215	0·78	65	0·52	42	1·88	230	4·78	985	3·44	
3	1·8	215	0·71	61	0·5	40	1·86	225	4·45	845	3·17	
4	1·77	210	0·72	62	0·49	39	1·8	215	5·85	1,300	2·98	
5	1·72	205	0·73	63	0·48	38	1·74	205	5·4	1,150	2·81	
6	1·7	200	0·71	61	0·48	38	1·66	190	4·9	1,100	2·63	
7	1·67	195	0·71	61	0·49	39	1·58	180	5·15	1,075	2·48	
8	1·51	170	0·70	60	0·50	40	1·49	170	5·0	1,130	2·40	
9	1·48	170	0·70	60	0·51	41	1·42	160	4·72	945	2·31	
10	1·46	165	0·70	60	0·51	41	1·37	130	4·40	875	2·14	
11	1·4	155	0·69	59	0·56	46	1·47	150	4·44	860	2·1	
12	1·37	150	0·68	58	0·55	45	1·6	185	4·15	775	1·97	
13	1·34	145	0·68	58	0·55	45	4·7	940	3·84	680	1·89	
14	1·29	140	0·67	57	0·57	47	5·84	1,290	3·52	560	1·82	
15	1·25	135	0·66	56	0·61	51	5·13	1,070	3·24	520	1·75	
16	1·19	125	0·65	55	0·66	58	5·18	1,080	2·90	470	1·7	
17	1·18	120	0·6	50	0·69	59	6·4	1,500	2·76	440	1·67	
18	1·15	115	0·59	49	0·70	60	7·8	2,030	2·61	475	1·59	
19	1·13	115	0·60	50	1·15	117	7·2	1,790	2·68	495	1·55	
20	1·10	110	0·60	50	1·48	167	8·98	1,700	3·1	490	1·49	
21	1·03	103	0·59	49	1·60	185	6·05	1,470	3·45	545	1·46	
22	1·0	100	0·59	49	1·58	180	5·05	1,045	3·28	555	1·39	
23	0·89	83	0·58	48	1·52	173	4·3	820	4·54	890	1·49	
24	0·85	78	0·58	48	1·43	160	3·64	620	5·5	1,180	1·37	
25	0·82	73	0·57	47	1·31	140	3·12	540	5·74	1,260	1·32	
26	0·82	73	0·56	46	1·3	140	2·97	460	5·7	1,250	1·31	
27	0·82	73	0·55	45	1·3	140	2·7	400	5·11	1,060	1·29	
28	0·85	78	0·55	45	1·42	158	2·48	380	4·95	1,015	1·28	
29	0·81	71	0·55	45	1·49	170	2·19	295	4·51	880	1·25	
30	0·79	69	0·55	45	1·65	192	2·26	305	4·1	760	1·20	
31	0·78	68	0·55	45			1·04	48			1·3	

NANAIMO RIVER (1028).

Location.—Six miles from mouth; 800 feet upstream from Canadian lieries railway bridge; 8 miles from Ladysmith.

Records available.—Gauge readings daily, February 11, 1913, to Dece 31, 1913, Provincial Water Rights Branch; January 1, 1914, to March 31, Provincial Water Rights Branch; April 1, 1914, to December 31, 1914.

Drainage area.—Two hundred and forty-nine square miles.

Gauge.—Twelve-foot wooden staff nailed to tree, left bank, 50 feet upst from section.

Channel.—Straight 200 feet on each side of section, even gravel bed. control 400 feet downstream.

Discharge measurements.—One in 1911, four in 1913 by Provincial W Rights Branch; two in 1914, covering all but high stages.

Winter flow.—Open all winter.

Accuracy.—Between discharge of 20 and 3,000 cubic feet per second ac B. Above discharge of 3,000 cubic feet per second, accuracy C.

Co-operation.—Provincial Water Rights Branch established station in

NANAIMO RIVER (1025).

The Nanaimo river rises in the mountains at an altitude of some 5,000 feet, and flows in an easterly direction to its mouth, about 2 miles south of Nanaimo, in the strait of Georgia. Nanaimo river is some 35 miles in length. It is fed by many streams, the larger of which are Jump creek, which enters near the Nanaimo lakes, and Haslam creek which enters about 4 miles from the mouth.

The gauging station is located near the Canadian Collieries railway bridge about 6 miles from mouth. The drainage area above gauging station is 249 square miles. There are two lakes, covering an area of 2 square miles, known as the Nanaimo lakes, at an altitude of 700 feet on the Nanaimo river about 12 miles above gauging station.

The precipitation varies from 30 inches at mouth of river to about 60 inches at headwaters.

The power possibilities of the Nanaimo river were investigated during 1914 by the engineers of the Provincial Water Rights Branch.

The following is taken from the Water Rights Branch report for 1914:

"There do not appear to be any concentrated falls, but apparently with storage in the two lakes, four power sites might be developed namely.

Power Site	H	Available H.P.
Cassiday Canyon to Wellington Collieries Bridge	110	5,000
Wellington Collieries Bridge to South Fork Road Bridge	[illegible]	[illegible]
South Fork Road Bridge to South Fork	150	6,[illegible]
South Fork to storage dam	80	3,000
	[illegible]	26,100

The Nanaimo river flows through a large coal mining district. The towns of Ladysmith and Nanaimo are also both within a reasonable distance. These should offer a good market for hydro-electric power.

DISCHARGE MEASUREMENTS of Nanaimo River near Canadian Collieries Ry. bridge, for 1914.

Date.	Hydrographer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
1914			Feet	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
[illegible]	Webb and Cotton	1037	128	[illegible]	[illegible]	1.60	317*
[illegible]	C. P. Cotton	1077	120	[illegible]		[illegible]	93

* Station established.

MONTHLY DISCHARGE of Nanaimo River six miles from mouth, for 1914.

Month.	Discharge in Second-Feet.				Run-Off.		Accura
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	25,300	770	3,840	15·40	17·80	236,000	C
February	4,980	570	1,240	4·98	5·19	68,900	B
March	8,320	980	2,520	10·10	11·60	155,000	C
April	6,510	980	2,430	9·75	10·90	145,000	C
May	1,650	690	1,070	4·30	4·96	65,600	B
June	840	500	650	2·61	2·91	38,700	B
July	485	130	265	1·06	1·22	16,300	B
August	130	70	93	0·37	0·43	5,700	B
September	1,220	68	335	1·35	1·51	19,900	B
October	11,600	360	3,290	13·20	15·20	202,000	C
November	10,650	880	4,390	17·60	19·60	261,000	C
December	3,140	330	740	2·98	3·44	45,500	B
The year	25,300	68	1,739	6·98	94·76	1,259,600	C

DAILY GAUGE HEIGHT AND DISCHARGE of Nanaimo River six miles from mouth, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3·01	1,210	3·2	1,400	6·64	8,320	2·77	1,010	3·09	1,290	2·42	770
2	3·91	2,275	3·01	1,210	5·64	6,020	2·8	1,040	3·44	1,650	2·53	840
3	5·3	5,250	2·8	1,040	4·94	4,440	3·54	1,770	3·39	1,590	2·5	820
[illegible]	13·8	25,300	2·68	950	4·43	3,300	4·58	3,630	3·09	1,290	2·33	720
5	9·29	14,500	2·51	830	3·92	2,290	5·4	5,480	2·89	1,110	2·15	610
6	8·99	13,800	2·39	750	3·52	1,750	4·61	3,690	2·78	1,020	2·03	540
7	6·77	8,620	2·29	690	3·25	1,450	4·01	2,420	2·77	1,010	2·07	560
8	5·25	5,140	2·21	650	3·2	1,400	3·69	1,970	2·9	1,120	2·31	710
[illegible]	4·35	3,135	2·12	590	3·19	1,390	3·58	1,820	2·93	1,140	2·36	740
10	3·93	2,300	2·11	590	3·09	1,290	3·62	1,880	2·94	1,150	2·38	750
11	4·79	4,100	2·1	580	2·93	1,140	3·6	1,850	2·96	1,160	2·27	680
12	4·72	3,940	2·09	570	1·93	485	3·48	1,700	2·93	1,140	2·26	670
13	4·6	3,670	2·16	620	3·81	2,130	3·78	2,090	2·98	1,180	2·29	690
14	4·19	2,800	2·22	650	6·36	7,680	5·17	4,960	3·03	1,230	2·34	720
15	3·55	1,790	2·3	700	5·25	5,140	5·85	6,510	2·99	1,190	2·[illegible]	770
16	3·98	2,230	2·35	730	4·44	3,320	4·85	4,240	2·82	1,060	2·43	780
17	3·59	1,840	2·41	770	4·22	2,860	4·04	2,480	2·69	950	2·36	740
18	3·41	1,610	2·48	810	4·03	2,460	4·33	3,090	2·59	880	2·27	680
19	3·42	1,620	2·51	830	3·94	2,320	5·04	4,660	2·56	860	2·23	660
20	3·32	1,520	2·54	850	4·09	2,590	4·58	3,630	2·59	880	2·03	540
21	3·24	1,440	2·73	980	4·06	2,520	3·89	2,250	2·7	960	1·98	500
22	3·08	1,290	3·28	1,480	3·99	2,380	3·41	1,610	2·84	1,070	2·01	530
23	2·98	1,180	3·43	1,640	3·69	1,970	3·14	1,340	2·9	1,120	2·03	540
24	2·75	1,000	3·83	2,160	3·4	1,600	2·94	1,150	2·85	1,080	2·04	540
25	2·69	950	3·69	1,970	3·19	1,390	2·81	1,050	2·8	1,040	2·14	620
26	2·68	940	3·48	1,700	2·93	1,140	2·72	980	2·82	1,060	2·2	640
27	2·59	880	5·18	4,980	2·79	1,030	2·92	1,140	2·79	1,030	2·13	600
28	2·42	770	4·75	4,000	2·74	990	2·94	1,150	2·58	880	2·07	560
29	2·59	880			2·72	980	2·88	1,100	2·36	740	2·0	520
30	3·31	1,510	....	..	2·83	1,060	2·84	1,070	2·28	690	2·01	530
31	3·33	1,530	.....		2·84	1,070		.	2·[illegible]1	710	.	

DAILY GAUGE HEIGHT AND DISCHARGE of Nanaimo River six miles from mouth, for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·93	485	0·88	130	0·50	70	2·43	780	6·6	8,230	4·35	3,140
2	1·91	475	0·85	120	0·50	70	2·61	900	7·65	10,650	3·79	2,110
3	1·88	460	0·83	115	0·51	71	2·51	830	6·47	7,930	3·47	1,680
4	1·8	420	0·82	115	0·49	69	2·38	750	6·55	8,120	3·23	1,430
5	1·73	390	0·8	110	0·48	68	2·15	610	5·7	6,160	3·06	1,250
6	1·65	360	0·78	105	0·49	69	2·0	520	4·35	3,140	2·84	1,070
7	1·6	340	0·76	100	0·58	78	1·87	455	3·85	2,190	2·68	950
8	1·6	340	0·78	105	0·62	82	1·74	395	4·65	3,780	2·57	870
9	1·51	305	0·79	110	0·65	85	1·65	360	5·44	5,570	2·42	770
10	1·5	300	0·8	110	0·64	84	1·75	400	4·65	3,780	2·31	710
11	1·49	295	0·76	100	0·67	87	1·71	380	4·8	4,120	2·22	650
12	1·47	290	0·75	100	0·67	87	3·83	[illegible],160	4·22	2,860	2·13	600
13	1·44	280	0·74	100	0·69	89	7·97	11,500	3·83	2,160	2·05	550
14	1·43	280	0·72	95	0·7	90	6·15	7,200	3·41	1,610	1·99	510
15	1·39	265	0·71	90	0·74	100	4·7	3,890	3·26	1,460	1·94	490
16	1·34	250	0·67	87	0·8	110	7·5	10,300	2·91	1,130	1·88	460
17	1·31	245	0·69	89	1·01	155	7·86	11,200	2·73	980	1·8	420
18	1·3	240	0·67	87	1·56	325	8·05	11,600	2·58	880	1·75	400
19	1·29	235	0·65	85	2·75	1,000	7·73	10,900	3·88	2,230	1·77	400
20	1·2	210	0·64	84	3·02	1,220	6·55	8,120	4·54	3,540	1·69	375
21	1·16	200	0·64	84	2·68	950	5·13	4,870	4·64	3,760	1·69	375
22	1·12	185	0·62	82	2·28	690	4·19	2,800	5·15	4,920	1·64	360
23	1·1	180	0·6	80	2·0	520	3·6	1,850	5·95	6,730	1·6	340
24	1·09	175	0·59	79	1·78	410	3·18	1,380	6·28	7,490	1·59	335
25	1·07	170	0·58	78	1·6	340	2·91	1,130	6·96	9,100	1·58	330
26	1·04	160	0·56	76	1·68	370	2·66	930	5·48	5,650	1·6	340
27	1·01	155	0·55	75	1·86	450	2·48	810	4·85	4,230	1·6	340
28	0·99	150	0·54	74	2·33	720	2·32	710	4·84	4,210	1·61	345
29	0·96	140	0·52	72	2·4	760	2·2	640	4·25	2,930	1·63	350
30	0·92	135	0·52	72	2·53	840	2·63	910	3·82	2,150	1·71	385
31	0·9	130	0·5	70			4·06	2,520	....	.	2·16	620

OYSTER RIVER VANCOUVER ISLAND (1040).

Location.—One mile from mouth, upstream side of Island highway bridge, 18 miles from Courtenay.

Records available.—Gauge readings twice daily, June 1, 1914, to December 31, 1914.

Drainage area.—Seventy square miles.

Gauge.—Twelve-foot enamel staff, nailed to cribbing on right bank, 20 feet downstream from bridge.

Channel.—Straight for 150 feet upstream and 400 feet downstream, gravel bed, good control.

Extreme low water measurements taken 1,000 feet upstream from bridge.

Discharge measurements.—Four in 1914, covering all but high stage.

Winter flow.—Open all year.

Accuracy.—Between discharge of 80 and 1,400 cubic feet per second, accuracy B. Above discharge of 1,400 cubic feet per second, accuracy C.

Oyster River (1040).

Oyster river rises in the mountains at an elevation of over 4,000 feet, and flows in an easterly direction to its mouth in the strait of Georgia, about 12 miles south of Campbell river. Oyster river is some 18 miles in length. Many branches from the mountains make up the main stream.

The river is fast and flashy. In the summer months the flow is small, as there is no natural storage. The valleys are still thickly wooded, although considerable timber has been taken out. There are several fine farms near its mouth.

Installing metal faced gauge at metering section on Oyster river, Vancouver Island.

The metering station is at the Island highway bridge. This highway crosses the river about 1 mile from mouth.

The precipitation is heavy, varying from 80 inches at the mouth of river to over 100 inches at headwaters. The power possibilities on this stream as yet have not been investigated by this survey.

Discharge Measurements of Oyster River near mouth, for 1914

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
June 1...	Webb & Cotton....	1,057	135	296	3·5	2·70	1,046
July 18	C. P. Cotton..	1,057	137	262	2·6	2·10	[illegible]
Sept. 5	C. E. Webb....	1,057	67	66	1·3	0·92	86
Nov. 11....	"	1,057	134	388	3·9	3·50	[illegible]

---

[1] Station established.

[2] Low-water section.

MONTHLY DISCHARGE of Oyster River one mile from mouth, for 1914.

(Drainage area, 70 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		ACCURACY.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June	1,330	710	950	13·60	15·20	56,500	B
July	1,080	340	700	10·00	11·50	43,000	B
August	410	140	275	3·93	4·53	16,900	B
September	1,470	90	350	5·00	5·58	20,800	B
October	3,000	270	1,040	14·80	17·06	64,000	C
November	2,170	540	1,280	18·30	20·40	76,200	C
December	1,030	140	460	6·57	7·56	28,300	B

DAILY GAUGE HEIGHT AND DISCHARGE of Oyster River one mile from mouth, for 1914.

DAY.	June.		July.		August		September.		October.		November.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft	Feet	Sec.-ft.
1	2·7	980	2·8	1,030	1·4	340	1·0	140	1·7	490	3·52	1,390
2	2·9	1,080	2·9	1,080	1·48	380	1·0	140	1·7	490	3·6	1,420
3	2·85	1,050	2·85	1,050	1·5	390	1·0	140	1·65	470	3·55	1,400
4	2·65	960	2·7	980	1·5	390	1·0	140	1·6	440	3·65	1,450
5	2·35	800	2·5	880	1·45	360	0·95	115	1·55	410	3·4	1,330
6	2·15	710	2·35	810	1·47	370	0·9	90	1·45	370	2·85	1,050
7	2·2	730	2·25	750	1·52	400	0·9	90	1·35	310	2·6	930
8	2·5	880	2·3	780	1·53	410	0·9	90	1·3	290	4·8	2,020
9	2·4	830	2·25	760	1·5	390	0·9	90	1·25	270	4·8	2,020
10	2·55	900	2·3	780	1·4	340	0·9	90	1·4	340	3·55	1,400
11	2·55	910	2·4	830	1·4	340	0·9	90	1·58	430	3·5	1,380
12	2·65	950	2·35	810	1·4	340	0·9	90	2·55	910	3·0	1,130
13	2·8	1,030	2·35	800	1·4	340	0·9	90	6·4	2,820	2·65	950
14	3·0	1,130	2·35	810	1·35	310	0·9	90	5·0	2,120	2·45	860
15	3·25	1,250	2·25	750	1·33	300	0·9	90	3·45	1,350	2·25	750
16	3·4	1,330	2·2	730	1·3	290	1·13	205	6·75	3,000	2·0	640
17	3·15	1,210	2·25	750	1·25	270	1·33	365	5·45	2,350	1·9	590
18	3·1	1,180	2·2	730	1·2	240	1·35	315	4·45	1,840	1·8	540
19	2·75	1,000	2·2	730	1·2	240	3·7	1,470	4·6	1,920		900
20	2·55	910	2·2	730	1·15	220	2·96	1,100	3·65	1,450		1,000
21	2·35	800	1·95	620	1·15	210	2·25	760	3·85	1,540	3·3	1,280
22	2·25	750	1·75	510	1·1	190	2·05	660	3·85	1,550	4·1	1,670
23	2·25	760	1·7	490	1·1	190	1·85	570	3·0	1,130	4·1	1,670
24	2·25	750	1·75	520	1·1	190	1·73	500	2·35	800	4·8	2,020
25	2·85	1,050	1·7	490	1·0	190	1·6	440	2·05	660	5·1	2,170
26	2·7	960	1·7	490	1·05	160	1·6	440	1·85	560	3·75	1,500
27	2·55	910	1·65	470	1·05	170	1·75	510	1·9	590	3·6	1,420
28	2·45	850	1·55	410	1·05	160	1·8	540	1·8	540	3·6	1,420
29	2·5	880	1·5	390	1·05	170	1·8	540	1·7	490	3·05	1,150
30	2·65	960	1·48	380	1·0	140	1·7	490	2·75	1,000	2·8	1,030
31	....	..	1·4	340	1·0	140	..		3·5	1,380		...

DAILY GAUGE HEIGHT AND DISCHARGE of Oyster River one mile from mouth, for 1914—*Con.*

Day.	December.	
	Gauge Height	Dis-charge
	Feet.	Sec. ft.
1	2·55	900
2	2·45	860
3	2·8	1 030
4	2·6	930
5	2·4	830
6	2·25	750
7	2·2	730
8	2·1	680
9	2·0	640
10	1·85	570
11	1·65	460
12	1·6	440
13	1·6	440
14	1·5	390
15	1·4	340
16	1·4	340
17	1·25	260
18	1·25	270
19	1·3	290
20	1·2	240
21	1·2	240
22	1·2	240
23	1·1	190
24	1·1	190
25	1·0	140
26	1·1	190
27	1·15	210
28	1·15	220
29	1·15	210
30	1·45	370
31	...	640

PUNTLEDGE RIVER, VANCOUVER ISLAND (1036).

Location.—One mile from mouth, downstream side of highway bridge, 1 mile from Courtenay.

Records available.—Gauge readings twice a day, May 30 1914, to December 31, 1914.

Drainage area.—Two hundred square miles.

Gauge.—Fourteen-foot wooden staff nailed to piling of right abutment of trussed span of railway bridge, downstream side.

Channel.—Straight for 800 feet upstream, and 200 feet downstream. ven gravel bed; good control; one channel, except in extreme high water when there is one small side channel.

Discharge Measurements.—Four in 1914, covering all but highest stag

Winter flow.—Open all year.

Accuracy.—Between discharge of 400 and 4,000 cubic feet per se ond accuracy B. Below discharge of 400 and above 4,000 cubic feet per se ond, accuracy C.

PUNTLEDGE RIVER (1036).

The Puntledge river flows from Comox lake to the sea in Comox ha our a distance of about 8 miles. Comox lake covers an area of about 9 square ile and lies at an altitude of some 430 feet. The lake is fed from the mounta s by several large creeks, the most important of which are the Cruikshank riv and Trout creek. The drainage area of Puntledge river is 200 square miles.

The precipitation is heavy, varying from 70 inches at mouth to over 100 inches at headwaters.

The Canadian Collieries (Dunsmuir), Limited, have installed a hydro-electric development for 25,000 horse-power on this river about 5 miles below Comox lake. A brief description of this development may be found under the heading of "Hydro-Electric Developments in Operation."

Brown river, a tributary entering the Puntledge river from the north, is being investigated with a view of obtaining a water supply for the town of Courtenay.

Another small development may be made on the Puntledge river, about half a mile below the power-house of the Canadian Collieries plant, by the erection of a dam.

DISCHARGE MEASUREMENTS of Puntledge River near mouth, for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity	Gauge Height.	Discharge
1914.			Feet.	Sq. ft	Ft per sec.	Feet.	Sec.-ft.
May 30	Webb & Cotton	1057	186	463	5·3	3·58	2,450*
July 17	C. P. Cotton	1057	146	378	4·8	3·50	1,820
Sept. 4	C. E. Webb	1057	127	150	2·9	1·90	457
Nov 10	do	1057	324	631	5·5	4·66	3,490

*Station established.

MONTHLY DISCHARGE of Puntledge River one mile from mouth, for 1914.

(Drainage area, 200 square miles.)

Month.	Discharge in Second-Feet				Run-Off.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area.	Total in acre-feet.	
June	2,250	1,570	1,840	9·20	10·30	109,000	B
July	2,310	800	1,400	7·00	8·07	86,100	B
August	840	480	610	3·05	3·52	37,500	B
September	2,550	450	750	3·75	4·18	44,600	B
October	13,000	680	3,950	19·75	22·75	243,000	C
November	3,810	2,550	3,220	16·10	18·00	192,000	B
December	3,180	510	1,380	6·90	8·00	84,900	B

DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River one mile from mouth, for 1914.

DAY.	May.		June.		July.		August.		September.		October.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			3·7	2,190	3·42	1,870	2·25	800	1·8	480	2·6	1,090
2			3·75	2,250	3·55	2,010	2·3	840	1·8	480	2·57	1,060
3			3·75	2,250	3·6	2,070	2·27	820	1·8	480	2·55	1,040
4			3·65	2,130	3·65	2,130	2·2	760	1·8	480	2·5	1,000
5			3·5	1,950	3·8	2,310	2·15	720	1·8	480	2·5	1,000
6			3·4	1,850	3·8	2,310	2·15	720	1·8	480	2·45	960
7			3·5	1,950	3·5	1,950	2·2	760	1·8	480	2·4	920
8			3·55	2,010	3·1	1,550	2·2	760	1·8	480	2·3	840
9			3·5	1,950	2·95	1,410	2·2	760	1·8	480	2·15	720
10			3·5	1,950	2·8	1,270	2·15	720	1·8	480	2·1	680
11			3·53	1,990	2·8	1,270	2·05	640	1·8	480	3·3	1,750
12			3·58	2,050	2·84	1,310	1·95	570	1·8	480	5·45	4,810
13			3·58	2,050	2·87	1,330	1·9	540	1·8	480	5·6	5,100
14			3·55	2,010	2·95	1,410	1·9	540	1·8	480	5·4	4,720
15			3·3	1,750	3·13	1,580	1·9	540	1·75	450	7·65	9,880
16			3·25	1,700	3·4	1,850	1·95	570	1·8	480	8·9	13,000
17			3·2	1,650	3·0	1,450	1·9	540	1·95	570	7·7	10,000
18			3·2	1,650	2·6	1,090	1·9	540	2·17	740	7·4	9,250
19			3·2	1,650	2·48	980	1·9	540	4·0	2,550	6·75	7,650
20			3·25	1,700	2·85	1,310	1·9	540	2·55	1,050	6·5	7,050
21			3·2	1,650	3·1	1,550	1·9	540	2·45	960	6·05	6,020
22			3·15	1,600	3·05	1,500	1·9	540	2·4	920	5·45	4,810
23			3·12	1,570	2·75	1,230	1·9	540	2·35	880	4·9	3,860
24			3·15	1,600	2·38	900	1·9	540	2·3	840	4·65	3,480
25			3·17	1,620	2·32	860	1·9	540	2·35	880	4·53	3,290
26			3·17	1,620	2·3	840	1·9	540	2·37	890	4·42	3,150
27			3·2	1,650	2·3	840	1·85	510	2·47	970	4·33	3,010
28			3·22	1,670	2·3	840	1·85	510	2·65	1,[illegible]	4·3	2,970
29			3·32	1,770	2·27	820	1·85	510	2·85	1,310	4·3	2,970
30	3·6	2,070	3·37	1,820	2·25	800	1·8	480	2·68	1,[illegible]	4·35	3,040
31	3·65	2,130	..	......	2·25	800	1·8	480	....	....	4·48	3,220

DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River one mile from mouth, for 1914—*Con.*

Day.	November.		December.	
	Gauge Height.	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	4·5	3,250	4·45	3,180
2	4·57	3,350	4·37	3,070
3	4·6	3,400	3·27	2,930
4	4·52	3,280	4·17	2,790
5	4·5	3,250	4·07	2,650
6	4·57	3,350	4·0	2,550
7	4·67	3,500	3·9	2,430
8	4·77	3,650	3·82	2,300
9	4·8	3,700	3·65	2,130
10	4·72	3,580	3·45	1,900
11	4·72	3,580	3·32	1,770
12	4·57	3,350	3·17	1,620
13	4·42	3,140	2·95	1,400
14	4·27	2,930	2·75	1,230
15	4·17	2,800	2·58	1,070
16	4·12	2,720	2·4	920
17	4·1	2,690	2·12	700
18	4·02	2,580	2·1	680
19	4·0	2,550	2·1	660
20	4·0	2,550	2·05	640
21	4·12	2,720	2·0	600
22	4·22	2,860	2·0	600
23	4·37	3,070	2·0	600
24	4·52	3,280	1·95	570
25	4·62	3,430	1·9	540
26	4·75	3,620	1·9	540
27	4·87	3,810	1·85	510
28	·85	3,780	1·85	510
29	4·75	3,620	1·9	540
30	4·55	3,330	1·92	550
31	....	....	2·05	640

PUNTLEDGE RIVER (1063) AT DIVERSION DAM.

Location.—At diversion dam of Puntledge river, hydro-electric installation, Canadian Collieries (Dunsmuir), Limited.

Records available.—June 7 to December 31, 1913; January 1 to December 31, 1914.

Drainage area.—175 square miles.

Gauge.—Wooden staff located on right bank fifty feet above diversion dam.

Channel.—Very even flow.

Discharge measurements.—Daily discharge obtained by weir measurements over diversion dam plus water to flume.

Winter flow.—Open all year.

Co-operation.—All data on this station supplied through the kindness of Mr. L. Netland, resident Engineer for Canadian Collieries (Dunsmuir) Ltd.

PUNTLEDGE RIVER (1063) AT DIVERSION DAM OF PUNTLEDGE RIVER HYDRO-ELECTRIC INSTALLATION.

The diversion dam of the Puntledge river hydro-electric installation is located about 2½ miles below Comox lake. The drainage area above dam is 175 square miles.

The station was established in June, 1913, by the Canadian Collieries (Dunsmuir), Limited, and daily discharges are obtained by gauge readings at crest of weir at diversion dam. The flow into flume to intake is added to the discharge over dam.

Mr. L. Netland, resident engineer of the Canadian Collieries Company has kindly supplied all the data on this station.

For climatic conditions, etc., see description of Puntledge river, No. 1036, near mouth.

MONTHLY DISCHARGE of Puntledge River at Diversion dam for Power plant, for 1914.

(Drainage area, 175 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
January	3,200	380	1,890	10·8	12·5	116,000
February	860	440	540	3·1	3·2	30,000
March	1,850	700	770	4·4	5·1	47,000
April	2,900	1,850	2,420	13·8	15·4	144,000
May	2,080	1,440	1,700	9·7	11·2	105,000
June	4,640	800	2,390	13·7	15·3	142,000
July	2,300	400	880	5·0	5·8	54,100
August	400	240	330	1·9	2·2	20,300
September	1,650	240	510	2·9	3·2	30,300
October	5,780	360	2,740	15·7	18·1	168,000
November	2,160	2,200	2,660	25·2	28·1	158,000
December	2,600	340	1,060	6·1	7·0	65,200
The year	5,780	240	1,490	9·4	127·1	1,079,000

DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River at Diversion Dam, Puntledge River Hydro-electric Installation, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		380		560		860		1,850		2,080		3,500
2		600		600		860		1,850		1,440		5,400
3		800		560		900		1,850		1,840		5,100
4		900		560		800		2,000		1,840		4,640
5		1,200		560		760		2,000		1,760		4,480
6		1,400		560		700		2,050		1,760		4,200
7		2,200		480		700		2,050		1,750		4,060
8		3,200		480		700		2,300		1,650		3,900
9		2,200		500		700		2,300		1,650		3,400
10		3,000		500		700		2,300		1,650		3,[illegible]
11		3,000		500		700		2,300		1,650		2,750
12		3,200		500		700		2,380		1,520		2,640
13		3,180		440		760		2,480		1,520		2,5[illegible]
14		3,000		440		800		2,750		1,650		2,320
15		2,900		440		800		2,900		1,750		1,850
16		2,800		460		800		2,760		1,740		920
17		2,600		460		760		2,600		1,740		800
18		2,500		460		1,200		2,600		1,740		1,280
19		2,400		460		800		3,100		1,740		1,300
20		2,200		460		800		3,100		1,740		1,240
21		2,100		460		800		2,740		1,740		1,240
22		1,900		460		880		2,800		1,740		1,240
23		1,760		520		1,800		2,720		1,730		1,240
24		1,650		650		1,800		2,600		1,730		1,160
25		1,480		700		1,850		2,600		1,730		1,240
26		1,300		700		1,850		2,500		1,730		1,240
27		1 150		780		1,850		2,400		1,730		1,240
28		1,000		860		1,850		2,300		1,720		1,240
29		660				1,850		2,200		1,650		1,240
30		400				1,850		2,200		1,560		1,240
31		460				1,850				1,560		

DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River at Diversion Dam Puntledge River Hydro-electric Installation, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		1,440		360		240		900		2,300		2,600
2		1,580		360		240		800		2,900		2,600
3		1,580		360		240		600		2,760		2,500
4		1,580		361		240		560		3,000		2,300
5		1,780		360		240		560		2,720		2,050
6		2,300		360		240		560		2,720		2,050
7		2,050		360		240		500		2,720		2,050
8		1,400		360		240		450		2,720		2,000
9		700		400		240		450		3,000		1,750
10		700		400		240		360		3,160		1,550
11		700		360		240		2,500		3,160		1,450
12		700		340		240		3,200		2,750		1,200
13		700		340		240		2,850		2,750		800
14		700		340		240		4,800		2,750		560
15		700		340		240		5,760		2,600		480
16		700		340		240		5,790		2,5[illegible]		460
17		660		340		240		5,760		2,5[illegible]		500
18		660		340		240		5,300		2,[illegible]00		500
19		660		340		250		4,990		2,[illegible]		500
20		560		340		260		5,250		2,[illegible]00		500
21		560		340		790		5,250		2,200		460
22		560		340		880		4,200		2,200		460
23		560		340		880		2,760		2,300		470
24		560		340		880		2,760		2,400		420
25		560		300		930		2,760		2,550		420
26		500		260		950		2,280		2,700		360
27		460		250		930		2,280		3,000		360
28		460		240		950		2,400		3,000		340
29		400		240		1,650		2,400		2,990		340
30		400		240		1,600		2,400		2,600		380
31		400		240				2,500				420

SHAWNIGAN CREEK (1025).

Location.—Five hundred feet from outlet of Shawnigan lake, upstream side of Esquimalt and Nanaimo Railway bridge, 300 yards from Koenigs station.

Records Available.—Gauge readings daily, May 11, 1914 to December 3, 1914.

Drainage Area.—Twenty-two square miles.

Gauge.—Six-foot enamel staff nailed to piling on left downstream side of highway bridge at outlet from lake.

Channel.—Straight for 50 feet on both sides of section; gravel and sand bed; one channel only.

Discharge Measurements.—One in 1913, Provincial Water Rights Branch four in 1914, covering all stages.

Winter Flow.—Open all year.

Accuracy.—Between discharge of 0 and 280 cubic feet per second, accurac
A. Above discharge of 280 cubic feet per second, accuracy B.

Co-operation.—Provincial Water Rights Branch.

Shawnigan Creek (1025).

Shawnigan creek is the outlet of Shawnigan lake to the sea in Mill bay on Saanich inlet. It is some 4 miles in length. The drainage area above the metering section, which is located at the outlet of Shawnigan lake, is 22 square miles.

Shawnigan lake lies at an altitude of 381 feet and covers an area of 3 square miles. The Esquimalt and Nanaimo railway is located along the east shore, and the Canadian Northern railway along the west shore. There are several large sawmills located on Shawnigan lake. The lake is popular with the tourists, there being two hotels, and many fine summer homes along its shores.

The precipitation averages about 40 inches. July and August are dry months, and the water goes very low. In the summer of 1914 Shawnigan creek had no flow for several weeks.

The principal use for the water of this lake would be for municipal supply; with an impounding dam at its outlet, considerable water could be stored.

Discharge Measurements of Shawnigan River near Shawnigan Lake, 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
May 11	C. E. Webb	1057	19	41	0·6	1·71	25·2[1]
July 5	Webb and Cotton	1057	18	11	0·3	1·06	3·2[2]
Aug. 8	C. P. Cotton	1057	3	1	0·3	0·43	0·3
Sept 16	C. E. Webb	1057	....	....	....	0·00	0·0
Nov 24	"	1933	22	98	2·5	4·33	245·0

[1] Station established. [2] Several different sections used.

Monthly Discharge of Shawnigan Creek near Shawnigan Lake, for 1914.

(Drainage area, 22 square miles.)

Month	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June	10·0	5·0	8·0	0·36	0·40	476
July	5·0	1·2	31·0	1·41	1·63	1,910
August	1·2	0·0	0·2	0·01	0·01	12
September	0·0	0·0	0·0	0·00	0·00	0
October	22·0	0·0	8·0	0·36	0·42	492
November	240·0	39·0	180·0	8·18	9·13	10,700
December	264·0	59·0	117·0	5·32	6·13	7,190

Accuracy "A."

DAILY GAUGE HEIGHT AND DISCHARGE of Shawnigan Creek at Shawnigan lake, for 1914.

Day.	May.		June.		July.		August.		September.		October	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft.	Feet	Sec.-ft
1			1·3	10	1·1		0·65	1·2		0·0	0·0	0·0
2			1·3	10	1·1		0·5	0·6		0·0	0·0	0·0
3			1·3	10	1·1		·5	6		0·0	0·0	0·0
4			1·3	10	1	[illegible]	0·5	0·6		0·0		0·0
5			1·3	10	[illegible]	[illegible]	0·55	[illegible]		0·0		[illegible]
6			1·3	10	[illegible]	[illegible]	[illegible]	[illegible]		0·0		0·0
7			1·3	10	[illegible]	[illegible]	[illegible]	[illegible]		0·0		0·0
8			1·3	10	[illegible]	[illegible]	[illegible]	[illegible]		0·0	0·0	0·0
9			1·3	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0·0	0·05	0·0
10			1·3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	0·0	0·10	0·0
11	1·7	24	1·3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0·0	0·20	0·1
12	1·7	24	1·3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0·0	0·40	0·3
13	1·7	24	1·3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0·0	0·4	[illegible]
14	1·65	22	1·25	[illegible]	1·0	[illegible]	[illegible]	[illegible]		0·0	0·4	0·3
15	1·65	22	1·25	[illegible]	1·0	[illegible]	[illegible]	[illegible]		0·0	0·5	0·6
16	1·6	20	1·25	[illegible]	[illegible]	[illegible]	[illegible]	0·1	0·0	0·0	0·6	1·0
17	1·6	20	1·2	[illegible]	1·05	[illegible]	[illegible]	0·0		0·0	0·8	2·0
18	1·6	20	1·2	7	[illegible]	[illegible]	[illegible]	0·0		0·0	1·0	[illegible]
19	1·55	18	1·2	7	[illegible]	[illegible]	[illegible]	[illegible]		0·0	1·2	7·0
20	1·55	18	1·15	6	[illegible]	[illegible]	[illegible]	[illegible]		0·0	1·4	[illegible]
21	1·5	16	1·15	6	0·8			0·0	0·0	0·0	1·5	16·0
22	1·5	16	1·1	5	0·8			[illegible]		0·0	1·55	18·0
23	1·5	16	1·1	5	0·8			0·0		0·0	1·6	20·0
24	1·45	15	1·1	5	0·8	2·0		0·0		0·0	1·6	20·0
25	1·45	15	1·1	5	0·8	2·0		0·0		0·0	1·6	20·0
26	1·45	15	1·1	5	0·75	1·8		0·0	0·0	0·0	1·6	20·0
27	1·4	13	1·1	5	0·75	1·8		0·0		0·0	1·6	20·0
28	1·4	13	1·1	5	0·7	1·5		0·0		0·0	1·6	20·0
29	1·35	12	1·1	5	0·7	1·5		0·0		0·0	1·6	20·0
30	1·35	11	1·1	5	0·65	1·3		0·0	0·0	0·0	1·6	20·0
31	1·3	10			0·65	1·2		0·0			1·65	22·0

Daily Gauge Height and Discharge of Shawnigan Creek at Shawnigan lake, for 1914.—*Con.*

Day	November		December	
	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft.
1	2·00	39	4·50	264
2	2·7	89	4·0	210
3	2·8	97	3·8	190
4	3·0	114	3·6	170
5	3·1	123	3·4	150
6	3·3	141	3·5	160
7	3·4	150	3·6	170
8	3·5	160	3·65	175
9	3·5	160	3·5	160
10	3·5	160	3·4	150
11	3·55	165	3·3	141
12	3·55	165	3·2	132
13	3·65	175	3·15	128
14	3·8	190	3·1	123
15	3·8	190	3·05	118
16	3·85	195	3·0	114
17	3·9	200	2·9	106
18	3·95	205	2·8	97
19	4·0	210	2·7	89
20	4·0	210	2·65	85
21	4·0	210	2·5	73
22	4·1	220	2·45	70
23	4·2	230	2·4	66
24	4·25	235	2·4	66
25	4·3	240	2·3	59
26	4·3	240	2·35	63
27	4·3	240	2·3	59
28	4·2	230	2·3	59
29	4·1	220	2·3	59
30	4·05	215	2·3	59
31	....		2·3	59

Sproat River, Vancouver Island, (1051).

Location.—Eight hundred feet below outlet from Sproat lake, 8 miles from Alberni.

Records Available.—Gauge readings four times a week; March 1, 1913, to December 31, 1913, Provincial Water Rights Branch; January 1, 1914, to May 31, 1914, Provincial Water Rights Branch; June 1, 1914, to December 31, 1914.

Drainage Area.—One hundred and twenty-eight square miles.

Gauge.—Twelve-foot wooden staff nailed to crib on lake shore, 300 feet to right of outlet

Channel.—Slight curve at section, straight for [illegible]00 feet above and below, gravel and boulder bed, solid rock on left side forms control, rapids and falls below section.

Discharge Measurements. Six in 1913 by Provincial Water Rights Branch; four in 1914, covering all but highest stage.

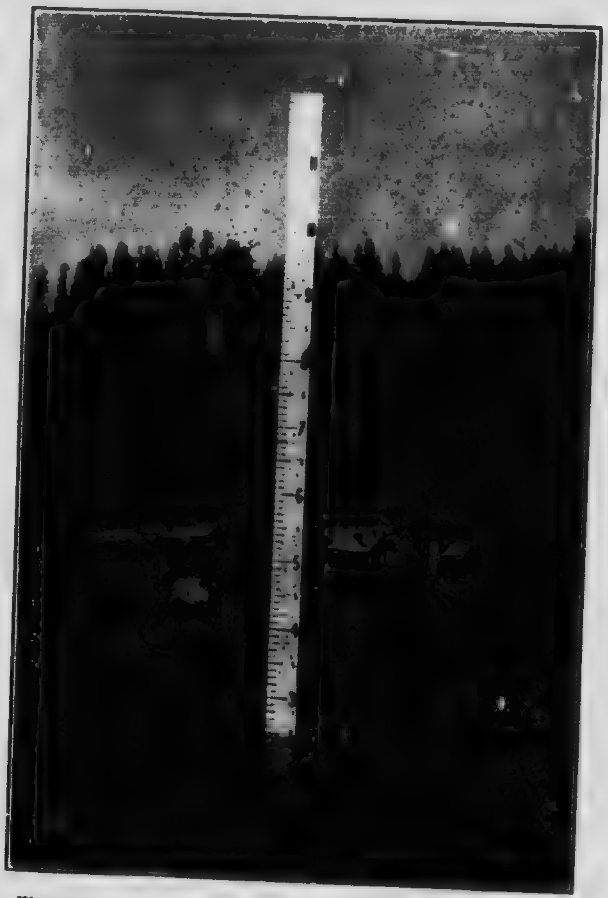
Winter Flow.—Open all winter.

Accuracy.—Between discharge of 700 and 2,100 cubic feet per second, accuracy A. Below discharge of 700 and above 2,100 cubic feet per second, accuracy B.

Co-operation.—Station established in 1913 by Provincial Water Rights Branch.

SPROAT RIVER (1051).

Sproat river is the outlet of Sproat lake, which lies at an altitude of about 80 feet. Sproat river flows in an easterly direction, and is some 3 miles in length. At its mouth it joins the Stamp river. The combined flow of these two streams is known as the Somass river, and is about 4 miles in length. The Somass river empties into the Alberni canal at Alberni.



Wooden Staff ge on Sproat lake near outlet, attached to rock filled crib.

The gauging station on Sproat river is located near the outlet from Spr lake. The drainage area above station is 128 square miles. Sproat lake it covers an area of 17 square miles.

This drainage is thickly timbered except, of course, in the highest altitud The precipitation is heavy in this district. It varies from about 70 inches mouth of Sproat river to 110 inches in mountains at headwaters in Clayoq divide.

Sproat river offers good possibilities for a hydro-electric development at falls, about half a mile from lake. The river drops 44 feet at this point, and in rapids below it drops another 15 feet in half a mile. It would be feasible to build an impounding dam at outlet from lake to raise water level of lake some 40 feet. By this means a head of nearly 100 feet might be obtained in a distance of 1 mile, and the regulation of the flow of stream.

Metering Section on Sproat river near outlet from Sproat lake.

Another larger development would be to bring water from Great Central lake, a distance of some 3½ miles, by means of a tunnel and pipe line. A head of about 170 feet may be obtained.

DISCHARGE MEASUREMENTS of Sproat River near Sproat Lake, 1914.

Date.	Hydrographer.	Meter No	Width	Area of Section	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft per sec	Feet	Sec.-ft.
June 18	Webb and Cotton	1057	98	434	2.3	4.03	977[1]
July 30	C. P. Cotton	1057	86	308	1.4	2.08	435
Sept 10	C. E. Webb	1057	77	212	0.8	1.3	160
Dec 12	"	1933	122	596	2.9	5.4	1,700

[1] Station established.

MONTHLY DISCHARGE of Sproat River at Sproat lake, for 1914.

(Drainage area, 128 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accurac
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	5,900	1,750	3,470	27·10	31·20	213,000	B
February	1,840	960	1,260	9·85	10·26	70,000	B
March	3,370	1,750	2,360	18·40	21·20	145,000	B
April	4,560	1,720	2,950	23·02	25·68	176,000	B
May	2,100	1,200	1,540	12·05	13·89	94,700	B
June	1,200	830	985	7·69	8·58	58,600	B
July	820	440	625	4·88	5·63	38,400	B
August	420	200	295	2·30	2·65	18,100	B
September	680	160	355	2·77	3·09	21,100	B
October	8,100	610	3,440	26·90	31·00	212,000	C
November	5,600	2,440	4,120	32·20	35·90	245,000	B
December	4,230	740	1,650	12·90	14·90	101,000	B
The year	8,100	160	1,920	15·00	203·98	1,392,900	B

DAILY GAUGE HEIGHT AND DISCHARGE of Sproat River at Sproat Lake, for 1914.

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharg
	Feet	Sec.-ft	Feet	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	3·65	820	2·4	420	1·52	200	3·25	680	7·48	3,350	8·3	4,2
2	3·64	820	2·35	400	1·5	190	3·3	690	7·89	3,780	7·91	3,8
3	3·5	760		390		190	3·29	680	8·1	4,000	7·55	3,4
4	..	760	2·23	380	1·45	180	3·25	670	8·6	4,560	7·15	3,
5	.	770	2·23	370	..	180		660	8·4	4,340	6·8	2
6	3·55	780		370	1·42	180	3·18	650	8·18	4,100	6·61	2
7		750	2·21	360	1·41	170	3·12	640	8·66	4,600	6·4	2
8	3·42	730	2·21	360	1·5	190	3·08	620	9·25	5,300	6·18	2
9		710		360	1·45	180	3·02	610	9·42	5,570	5·95	2
10	3·3	660	2·2	360	1·45	180	3·08	620	9·02	5,000	5·75	1
11		680	2·15	350		180	3·05	620	8·78	4,760	5·57	1
12	3·21	660		330	1·45	180	3·65	820	8·62	4,580	5·3	1,
13	3·19	660	2·05	310	1·45	180	6·95	2,800	8·35	4,300	5·1	1
14	3·15	650	2·0	300		180	8·6	4,560	8·0	3,900	4·95	1,
15	3·1	630		290	1·4	170	8·55	4,500	7·55	3,400	4·75	1
16	3·03	610	1·95	280	1·38	160	9·83	6,000	7·2	3,090	4·69	1
17	3·0	600	1·93	280	1·38	160	10·80	7,260	6·78	2,700	4·55	1
18	3·0	600	1·9	270	1·7	230	11·28	8,000	6·56	2,500	4·39	1
19	2·98	590	1·88	270	2·39	410	11·39	8,100	6·55	2,500	4·24	1
20	2·95	580		260	3·1	630	11·39	8,100	6·45	2,440	4·2	1
21	2·9	570	1·8	250	3·15	650	11·00	7,500	6·58	2,540	4·05	
22		550		250	3·1	630	10·20	6,500	7·07	3,000	3·97	
23	2·8	540	1·8	250	3·05	610	9·5	5,600	7·67	3,550	3·87	
24	2·72	510	1·76	240	3·02	600	9·11	5,100	8·8	4,780	3·8	
25	2·71	510	1·68	220	2·95	580	8·5	4,450		4,990	3·7	
26	2·7	510		220	2·98	590	7·98	3,900	9·25	5,300	3·62	
27		500	1·65	220	3·0	600	7·6	3,470	9·35	5,400	3·5	
28	2·6	480		220	3·2	600	7·42	3,300	9·5	5,600	3·45	
29	2·55	470	1·6	210	3·29	680	7·2	3,090	8·88	4,970	3·45	
30	2·5	450	1·58	200	3·28	680	7·25	3,130	8·65	4,600	3·49	
31	2·45	440	1·55	200			7·35	3,220			3·5	

Daily Gauge Height and Discharge of Sproat River at Sproat Lake, for 1914—Con.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		2,000	5·5	1,780	6·9	2,820	5·4	1,720	6·0	2,100	4·5	1,200
2		2,100	5·47	1,750		2,860	5·4	1,720	5·8	1,960		1,190
3	6·55	2,500	5·25	1,630	7·10	3,000	5·8	1,960	5·78	1,950	4·48	1,170
4	7·1	3,000		1,550	7·5	3,370	6·2	2,240		1,880		1,150
5	8·42	4,350	5·0	1,480	7·1	3,000	6·9	2,820	5·52	1,800	4·35	1,130
6	9·75	5,900	4·85	1,400	6·85	2,770		2,800		1,780	4·31	1,110
7		5,550	4·79	1,350	6·7	2,640	6·85	2,770	5·48	1,760		1,090
8	9·2	5,220	4·65	1,270		2,400		2,600	5·48	1,760	4·25	1,070
9	8·6	4,560	4·57	1,230		2,300	6·5	2,480		1,710	4·2	1,050
10		4,700	4·5	1,200	6·1	2,170	6·4	2,400	5·3	1,660		1,030
11	8·89	4,980	4·42	1,160		2,050		2,300		1,630	4·1	1,000
12	9·54	5,640	4·36	1,130	5·8	1,960	6·2	2,240		1,600	4·1	1,000
13		5,300	4·28	1,090	6·1	2,170	6·6	2,560		1,570	4·0	980
14	9·01	5,000	4·22	1,060	6·8	2,730	7·6	3,470	5·1	1,540		960
15	8·75	4,700		1,040	6·8	2,730		3,570		1,500	4·0	960
16	8·4	4,340		1,000	6·7	2,640	7·8	3,680	5·1	1,480		960
17	7·99	3,900		1,000	6·65	2,600		3,720	4·8	1,360		970
18		3,600		1,000	6·6	2,560	7·9	3,790		1,360	4·05	980
19	7·52	3,400		1,000	6·5	2,480	8·6	4,560	4·8	1,360	4·0	960
20		3,150		1,000	6·5	2,480	8·4	4,340		1,360	3·95	940
21	7·0	2,900		980	6·4	2,400	8·0	3,900	4·8	1,360		930
22	6·68	2,600		980	6·3	2,320		3,600		1,360	3·88	910
23	6·41	2,400	4·0	960	6·1	2,170	7·5	3,470	4·8	1,360	3·85	900
24	6·29	2,300		1,100	5·85	2,000		3,470		1,360		890
25	6·1	2,170	4·6	1,250	5·75	1,940	7·7	3,570	4·8	1,360	3·8	880
26	5·98	2,100	5·0	1,480	5·7	1,900	7·7	3,570	4·8	1,360	3·77	860
27	5·75	1,930	5·3	1,660	5·7	1,900	6·98	2,820		1,360		850
28		1,800	5·6	1,840	5·5	1,780	6·35	2,360	4·7	1,300	3·7	840
29	5·42	1,750				1,760	6·05	2,130	4·65	1,270	3·7	840
30	5·75	1,930			5·45	1,750		2,110	4·6	1,250	3·68	830
31		1,850				1,730			4·5	1,200		

Stamp River, Vancouver Island (1052) at Great Central Lake.

Location.—Three hundred feet below outlet from Great Central lake, 16 miles from Alberni.

Records Available.—Gauge readings twice daily: February 20, 1913, to December 31, 1913, Provincial Water Rights Branch; January 1, 1914, to May 31, 1914, Provincial Water Rights Branch; June 1, 1914, to December 31, 1914.

Drainage Area.—One hundred and seventy-seven square miles.

Gauge.—Twelve-foot wooden staff nailed to crib in lake, 300 feet to right of outlet, near the "Ark."

Channel.—Straight for 300 feet above and 100 feet below; rocky bed, some boulders; one channel at all stages; at extreme high stage there is a discharge from slough 1,000 feet to right of stream.

Discharge Measurements.—Seven in 1913, Provincial Water Rights Branch; Four in 1914, covering all but highest stages.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 90 and 6,000 cubic feet per second, accuracy B. Above discharge of 6,000 cubic feet per second, accuracy C.

Co-operation.—Station established by Provincial Water Rights Branch.

STAMP RIVER (1052) AT GREAT CENTRAL LAKE.

Stamp river is the outlet from Great Central lake. It flows in a northerly direction for a distance of about 3 miles, where it is entered on the left by the Ash river. From this point Stamp river flows south till it enters the Somass river, 4 miles from the Alberni Canal.

This gauging station is located on the river at outlet from Great Central lake. The gauge is situated in the lake close to head of river. The drainage area above gauging station is 177 square miles. Great Central lake covers an area of 19 square miles. It is about 270 feet above sea-level. Two good-sized mountain-fed streams—McBride creek and Drinkwater creek—enter the lake at the western end.

A hydro-electric development, giving a head of some 170 feet, is possible by the construction of a short tunnel through the divide between Great Central lake and Sproat lake, feeding a pipeline to a power-house located at Sproat lake. The total distance is about 3½ miles.

The precipitation is high, varying from about 80 inches at head of river to over 120 inches in mountains at head of lake.

The drainage is thickly timbered except on the higher mountains.

DISCHARGE MEASUREMENTS of Stamp River near Great Central Lake, for 1914.

Date		Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity	Gauge Height	Dischar
1914				Feet	Sq. ft.	Ft. per sec.	Feet	Sec.
June	19	[1]Webb & Cotton	1057	140	690	2·9	4·00	[illegible]
July	30	C. P. Cotton	1057	130	502	1·8	2·32	[illegible]
Sept	10	C. E. Webb	1057	107	333	1·2	1·28	[illegible]
Dec.	12	do	1057	136	642	2·8	3·70	[illegible]

[1] Station established.

MONTHLY DISCHARGE of Stamp River at Great Central Lake, for 1914.

(Drainage area, 177 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET				RUN-OFF		Ac
	Maximum	Minimum	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre-feet	
January	4,850	1,820	3,208	18·12	20·90	197,000	
February	1,870	900	1,240	7·0.	7·30	68,900	
March	2,760	1,900	2,436	13·75	15·85	150,000	
April.	4,820	2,030	3,316	18·72	20·90	197,000	
May	2,540	2,050	2,317	13·08	15·08	143,000	
June	2,070	1,700	1,848	10·44	11·65	110,000	
July	1,750	880	1,368	7·73	8·91	84,200	
August	850	450	437	3·60	4·15	39,200	
September	1,310	340	707	4·00	4·46	42,100	
October	8,300	1,010	3,793	21·42	24·70	233,000	
November	5,370	2,570	4,113	23·24	25·95	245,000	
December	4,200	720	1,731	9·78	11·28	106,000	
The year	8,300	340	2,230	12·60	171·13	1,615,400	

DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Great [illegible] Lake, for 1914.

DAY.	January		February.		March		April.		Ma		une	
	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height		Gauge Height	Discharge
	Feet.	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft	Feet		Feet	Sec.-ft
1	3·76	1,820	3·74	1,800	4·20	2,130	4·27	2,180	4·61	[illegible]	4·04	2,020
2	3·8	1,850	3·62	1,750	4·60	2,450	4·06	2,030	4·71	2,540	4·1	2,080
3	4·24	2,170	3·51	1,650	4·76	2,570	4·24	2,160	4·7	2,530	4·1	2,070
4	5·39	3,100	3·39	1,560	4·87	2,660	4·58	2,430	4·67	2,500	4·09	2,050
5	6·24	3,900	3·28	1,480	4·78	2,600	4·83	2,640	4·54	2,400	3·99	1,980
6	6·91	4,600	3·12	1,380	4·6	2,450	5·35	3,070	4·41	2,300	3·89	1,910
7	6·87	4,550	3·0	1,300	4·49	2,360	5·47	3,180	4·39	2,280	3·79	1,840
8	6·67	4,330	2·92	1,250	4·36	2,270	5·38	3,100	4·46	2,330	3·78	1,800
9	6·35	4,000	3·83	1,870	4·28	2,200	5·29	3,020	4·49	2,360	3·69	1,770
10	6·13	3,800	2·78	1,150	4·08	2,050	5·24	2,980	4·49	2,360	3·66	1,750
11	6·58	4,200	2·7	1,120	3·97	1,970	5·2	2,940	4·48	2,350	3·62	1,720
12	7·13	4,850	2·66	1,100	3·88	1,900	5·19	2,930	4·5	2,370	3·61	1,710
13	7·06	4,750	2·54	1,030	3·95	1,960	5·38	3,100	4·49	2,360	3·66	1,750
14	6·76	4,400	2·49	1,000	4·68	2,500	6·2	3,850	4·48	2,350	3·75	1,800
15	6·49	4,140	2·49	1,000	4·96	2,750	6·86	4,550	4·48	2,350	3·86	1,8
16	6·29	3,900	2·45	970	4·99	2,760	6·86	4,550	4·42	2,300	3·9	1,92
17	5·95	3,600	2·42	950	4·94	2,730	6·66	4,320	4·38	2,270	3·94	1,95
18	5·78	3,450	2·4	940	4·93	2,720	6·73	4,400	4·3	2,210	3·99	1,98
19	5·52	3,250	2·38	930	4·88	2,670	7·1	4,820	4·26	2,170	4·01	2,00
20	5·3	3,030	2·34	900	4·88	2,670	6·98	4,680	4·22	2,150	3·98	1,97
21	5·06	2,900	2·39	930	4·92	2,620	6·79	4,470	4·27	2,190	3·88	1,90
22	5·85	3,500	2·4	940	4·97	2,750	6·38	4,030	4·3	2,210	3·76	1,800
23	5·57	3,300	2·5	1,020	4·96	2,750	5·95	3,600	4·4	2,290	3·67	1,750
24	4·38	2,250	2·73	1,140	4·88	2,670	5·67	3,370	4·52	2,400	3·65	1,740
25	4·28	2,200	2·8	1,180	4·78	2,600	5·44	3,160	4·58	2,430	3·64	1,730
26	4·27	2,200	2·93	1,250	4·71	2,540	5·23	2,970	4·6	2,450	3·62	1,720
27	4·03	2,000	3·25	1,460	4·58	2,430	5·22	2,960	4·5	2,370	3·65	1,740
28	3·87	1,900	3·53	1,670	4·39	2,280	5·02	2,800	4·32	2,230	3·61	1,720
29	3·83	1,880			4·24	2,170	4·83	2,640	4·26	2,170	3·58	1,700
30	3·81	1,860			4·25	2,160	4·73	2,550	4·18	2,110	3·6	1,710
31	3·8	1,850			4·29	2,200			4·08	2,050		

DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Great Central Lake, for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		Decemb	
	Gauge Height	Discharge	Gauge Heigth	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Di
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec
1	3·58	1,700	2·25	850	1·37	440	2·96	1,270	6·0	3,660	6·54	4,200
2	3·61	1,720	2·19	820	1·32	420	3·00	1,300	6·14	3,800	6·19	3,840
3	3·67	1,750	2·13	800	1·3	410	2·96	1,270	6·31	3,980	5·89	3,560
4	3·67	1,750	2·1	780	1·26	390	2·88	1,230	6·58	4,240	5·56	3,290
5	3·67	1,750	2·07	750	1·22	380	2·83	1,200	6·51	4,160	5·23	[illegible]
6	3·64	1,750	2·1	780	1·2	370	2·72	1,130	6·28	3,920	5·0	[illegible]
7	3·54	1,670	2·07	730	1·22	380	2·66	1,100	6·01	3,670	4·76	2,580
8	3·43	1,600	2·06	750	1·26	390	2·59	1,060	7·19	4,930	4·56	2,400
9	3·32	1,520	2·07	730	1·21	370	2·54	1,020	7·57	5,370	4·28	[illegible]
10.	3·35	1,530	2·01	740	1·22	380	2·51	1,010	7·53	5,340	4·1	[illegible]
11	3·31	1,510	1·99	720	1·25	390	2·51	1,010	7·42	5,200	3·93	[illegible]
12	3·24	1,470	1·97	710	1·19	370	3·1	1,360	7·06	4,760	3·74	[illegible]
13	3·19	1,420	1·95	700	1·17	360	5·96	3,650	6·71	4,380	3·54	[illegible]
14	3·1	1,360	1·9	680	1·09	340	7·51	5,300	6·34	4,000	3·4	[illegible]
15	3·17	1,400	1·87	660	1·10	340	7·44	5,210	5·9	3,570	3·23	[illegible]
16	3·15	1,390	1·83	650	1·14	350	8·48	6,630	5·55	3,250	3·13	[illegible]
17	3·10	1,360	1·8	630	1·18	370	9·42	7,900	5·39	3,110	3·0	[illegible]
18	3·09	1,350	1·78	610	1·39	440	9·67	8,300	4·74	2,570	2·83	[illegible]
19	3·07	1,340	1·76	600	2·32	900	9·56	8,150	4·82	2,630	2·78	[illegible]
20	3·04	1,330	1·71	590	2·9	1,240	9·56	,150	4·86	2,660	2·71	[illegible]
21	2·99	1,300	1·69	580	2·94	1,260	9·1	7,500	4·86	2,660	2·6	[illegible]
22	2·92	1,250	1·61	540	2·9	1,240	8·51	6,650	5·56	3,280	2·58	[illegible]
23	2·83	1,200	1·58	510	2·86	1,200	7·86	5,700	5·91	3,580	2·44	[illegible]
24	2·76	1,150	1·58	510	2·8	1,180	7·28	5,000	6·72	4,400	2·3	[illegible]
25	2·71	1,130	1·52	500	2·76	1,150	6·76	4,440	7·41	5,200	2·1	[illegible]
26	2·6	1,080	1·5	490	2·7	1,130	6·39	4,040	7·54	5,360	2·08	
27	2·54	1,020	1·48	480	2·82	1,200	5·99	3,660	7·54	5,360	2·08	
28	2·44	960	1·46	470	2·9	1,240	5·63	3,330	7·36	5,130	2·07	
29	2·34	900	1·41	450	3·02	1,310	5·37	3,100	7·09	4,800	1·99	
30	2·33	900	1·43	460	2·98	1,300	5·31	3,230	6·78	4,450	2·09	
31	2·3	880	1·4	450			5·92	3,600	....	....	2·11	

STAMP RIVER, VANCOUVER ISLAND (1053), AT STAMP FALLS.

Location.—One-quarter mile above falls; 8 miles from Alberni on B Creek road.

Records available.—Gauge readings daily, March, 1913, to December 1913, Messrs. Ritchie, Agnew Co., Engineers, Victoria; January 1, 1914, to M 31, 1914, Messrs. Ritchie, Agnew Co., Engineers, Victoria; June 1, 191 December 31, 1914.

Drainage area.—Three hundred and thirty-six square miles.

Gauge.—Fourteen-foot wooden staff on left bank 80 feet below meas section.

Channel.—Straight for 600 feet above section and for 300 feet below. R bed with gravel. Good control.

Discharge measurements.—Measurements in 1913 by Messrs. Rit Agnew Co.; measurements in 1914 by Messrs. Ritchie, Agnew Co.; measurements in 1914 covering all but high stage.

Winter flow.—Open all winter.

Co-operation.—Station established in 1913 by Messrs. Ritchie, Agnew

STAMP RIVER (1053).

This metering station is located on Stamp river about a quarter of a mile above Stamp falls. Stamp falls are some 3 miles above the junction of the Stamp and Sproat rivers.

At Stamp falls the river has the combined flow of the Ash river and Stamp river from Great Central lake. The drainage area above metering section is 336 square miles. The precipitation varies from about 70 inches at falls to over 100 inches at headwaters.

The Ritchie Agnew Power Company have made extensive surveys and obtained considerable stream data in this locality. It is understood they intend to install a hydro-electric plant at Stamp falls to develop 35,000 horse-power. A head of 110 feet may be obtained by the erection of a dam above the falls.

The towns of Alberni and Port Alberni are about 10 and 12 miles distant respectively, from Stamp falls.

DISCHARGE MEASUREMENTS of Stamp River near Stamp Falls, for 1914.

Date	Hydrographer	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height	Discharge.
			Feet	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft
1914							
June 22	Webb & Cotton	1,057	155	1,130	2·3	2·48	2,630[1]
July 31	C. P. Cotton	1,057	150	944	1·2	1·40	1,130
Sept 11	C. E. Webb	1,057	141	750	0·7	0·60	500

[1] Station established

MONTHLY DISCHARGE of Stamp River at Stamp Falls, for 1914.

(Drainage area, 336 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET				RUN-OFF		Accuracy
	Maximum.	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet.	
[illegible]	[illegible],190	2,200	2,630	7·8	8·7	157,000	B
[illegible]	2,510	1,040	1,840	5·5	6·3	113,000	B
st	1,040	580	830	2·5	2·9	51,000	B
mber	1,930	410	1,070	3·2	3·6	63,700	B
ber	15,100	1,340	5,980	17·8	20·5	358,000	C
ember	14,400	1,930	7,440	22·1	24·7	443,000	C
ember.	5,530	880	2,100	6·3	7·3	129,000	B

NOTE.—Discharge measurements supplied by Messrs. Ritchie, Agnew Co., of Victoria, B.C.

DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Falls, for 1914.

Day.	June.		July.		August.		September.		October.		November	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	[illegible]. ft
1	3·0	3,190	2·6	2,510	1·4	1,040	0·7	560	1·9	1,560	4·6	7,540
2	3·0	3,190	2·6	2,510	1·4	1,040	0·7	560	1·8	1,450	4·6	7,540
3	2·9	3,020	2·6	2,510	1·3	960	0·6	510	1·8	1,450	4·7[illegible]	8,110
4	2·8	2,850	2·5	3,340	1·3	960	0·6	510	1·9	1,560	5·1	9,520
5	2·7	2,680	2·5	2,340	1·2	880	0·5	460	1·9	1,560	4·7	7,920
6	2·6	2,510	2·5	2,340	1·2	880	0·4	410	1·9	1,560	4·1	5,800
7	2·6	2,510	2·3	2,060	1·2	880	0·4	410	1·8	1,450	4·0	5,530
8	2·5	2,340	2·3	[illegible]	1·2	880	0·4	410	1·8	1,450	5·4	10,800
9	2·4	2,200	2·3	[illegible]	1·3	960	0·6	510	1·7	1,340	6·[illegible]5	14,400
10	2·4	2,200	2·3	2,060	1·4	1,040	0·6	510	1·7	1,340	5·[illegible]	10,800
11	2·5	2,340	2·2	1,930	1·3	960	0·6	510	1·7	1,340	5·1	9,520
12	2·6	2,510	2·2	1,930	1·2	880	0·6	510	3·6	4,490	4·6	7,540
13	2·6	2,510	2·2	1,930	1·2	880	0·9	660	5·1	9,520	4·2	6,100
14	2·6	2,510	2·3	2,060	1·2	880	0·9	660	6·0	13,400	3·75	4,880
15	2·8	2,850	2·3	2,060	1·2	880	1·0	730	6·4	15,100	3·5	4,240
16	2·8	2,850	2·2	1,930	1·2	880	1·3	960	6·4	15,100	3·3	3,800
17	2·9	3,020	2·1	1,800	1·2	880	1·1	800	6·1	13,800	3·1	[illegible]
18	3·0	3,190	2·1	1,800	1·2	880	2·0	1,670	5·8	12,500	2·2	[illegible]
19	3·0	3,190	2·1	1,800	1·2	880	2·0	1,670	5·6	11,700	2·2[illegible]	2,000
20	2·8	2,850	2·0	1,670	1·1	800	2·0	1,670	5·4	10,800	3·2	3,500
21	2·7	2,680	2·0	1,670	1·1	800	2·2	1,930	5·3	10,400	3·2[illegible]	3,700
22	2·5	2,340	2·0	1,670	1·1	800	2·2	1,930	4·8	8,320	4·2	6,100
23	2·5	2,340	1·9	1,560	1·1	800	2·1	1,800	4·7	7,920	4·8	8,120
24	2·5	2,340	1·8	1,450	0·9	660	2·0	1,670	4·5	7,160	5·3	10,400
25	2·6	2,510	1·8	1,450	0·9	660	2·0	1,670	4·0	5,530	5·6	11,700
26	2·6	2,510	1·8	1,450	0·9	660	2·0	1,670	3·7	4,750	5·8	[illegible]
27	2·5	2,340	1·8	1,450	0·9	660	2·0	1,670	3·5	4,240	5·2[illegible]	[illegible]
28	2·5	2,340	1·7	1,340	0·9	660	2·1	1,800	3·25	3,700	5·4	[illegible]
29	2·5	2,340	1·6	1,230	0·8	610	2·1	1,800	3·05	3,290	4·75	[illegible]
30	2·6	2,510	1·5	1,130	0·8	610	1·9	1,560	3·30	3,800	4·3	[illegible]
31	..		1·[illegible]	1,040	0·7	560			3·30	3,800		

DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Falls, for 1914—*Con.*

Day	December.	
	Gauge Height	Discharge
	Feet	Sec.-ft.
1	4·0	5,530
2	3·8	5,010
3	3·6	4,490
4	3·4	4,020
5	3·2	3,590
6	3	3,190
7	2	2,850
8	2·7	2,680
9	2·6	2,510
10	2·45	2,270
11	2·35	2,130
12	2·20	1,930
13	2·10	1,800
14	2·00	1,670
15	1·8	1,450
16	1·8	1,450
17	1·8	1,450
18	1·7	1,340
19	1·6	1,230
20	1·6	1,230
21	1·6	1,230
22	1·5	1,130
23	1·5	1,130
24	1·4	1,040
25	1·4	1,040
26	1·2	880
27	1·2	880
28	1·2	880
29	1·6	1,230
30	1·8	1,450
31	2·5	2,340

TSOLUM RIVER, VANCOUVER ISLAND, (1039).

Location.—Upstream side of footbridge, 2 miles from Sandwick.

Records available.—Gauge readings twice daily, May 31, 1914, to December 31, 1914.

Drainage area.—One hundred and fifty square miles.

Gauge.—Twelve-foot enamel staff, 20 feet downstream from bridge, right bank.

Channel.—Straight for 500 feet above and 300 feet below section; gravel bed; good control; stream confined in cribbing, both banks, in high water.

Discharge measurements.—One in 1912, Provincial Water Rights Branch; one in 1913, Provincial Water Rights Branch; four in 1914, covering all but high stage.

Winter flow.—Open all winter.

Accuracy.—B.

Co-operation.—Gauge installed by Provincial Water Rights Branch in 1912.

TSOLUM RIVER (1039).

Tsolum river rises in the mountains on the east coast, and flows in a south-westerly direction to its mouth in Comox harbour at Courtenay. It is some 20 miles in length, and has a drainage area of 150 square miles above the gauging station, which is located about 2 miles from mouth.

The precipitation varies from about 70 inches at mouth to 90 inches in mountains at headwaters. Wolfe lake, covering an area of about 1 square mile, drains into the Tsolum river about 7 miles from mouth.

The flow of Tsolum river has a large range. Having practically no storage, it is very flashy. From the records available for 1914 it shows a minimum discharge of 3 cubic feet per second on September 4 to a maximum of 2,100 cubic feet per second on September 18. The gauge was washed out during a freshet in October, but was replaced at the first opportunity.

A large proportion of the lower valley of the river is under cultivation. Dairying has been encouraged by the installation of a cream condenser at Courtenay, which takes all the milk available.

DISCHARGE MEASUREMENTS of Tsolum River near Sandwick B.C., for 1914.

Date	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity	Gauge Height	Discharge
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
May 31	Webb & Cotton	1057	65	127	1·4	3·78	171[1]
July 17	C. P. Cotton	1057	64	98	0·6	3·28	60
Sept 8	C. E. Webb	1057	6	2	0·9	2·58	1·8[2]
Nov 10	do	1057	98	291	3·0	5·30	882

[1] Station established. [2] Low-water section.

MONTHLY DISCHARGE of Tsolum River three miles from mouth, for 1914.

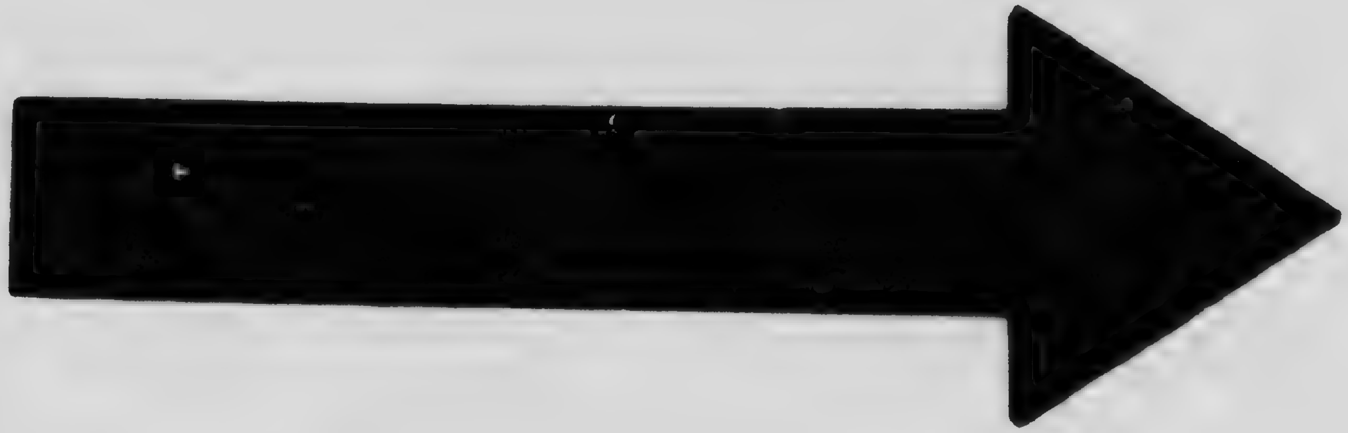
(Drainage area, 150 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June	520	95	230	1·53	1·71	13,7
July	195	18	63	0·42	0·48	3,8
August	28	4	11	0·07	0·08	6
September	2,100	3	310	2·06	2·30	18,4
October						
November	1,330	280	875	5·83	6·50	52,1
December	900	115	375	2·50	2·88	23,1

Accuracy "B".

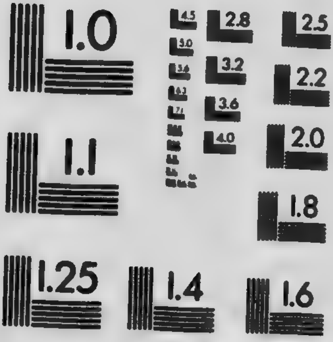
DAILY GAUGE HEIGHT AND DISCHARGE of Tsolum River three miles from mouth, for 1914.

Day	May		June		July		August.		September.		October.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.
1			4·0	200	3·85	195	2·6	4	2·6	4	3·65	130
2			4·1	300	3·75	160	2·6	4	2·6	4	3·9	215
3			4·1	300	3·7	145	2·9	18	2·6	4	3·8	175
4			3·95	230	3·55	105	2·85	15	2·55	4	3·7	145
5			3·75	160	3·5	95	2·8	12	2·5	4	3·7	145
6			3·65	130	3·45	85	2·8	12	2·5	3	3·7	145
7			3·75	160	3·4	75	2·8	12	2·65	6	3·6	115
8			4·15	320	3·4	75	3·0	28	2·7	8	3·6	115
9			3·8	175	3·4	75	2·95	23	2·8	12	3·6	115
10			4·0	200	3·4	75	2·9	18	2·8	12	3·7	145
11			4·0	200	3·4	75	2·9	18	2·8	12	3·7	145
12			4·0	200	3·4	75	2·85	15	2·8	12	6·45	1,430
13			4·05	250	3·4	75	2·8	12	2·8	12		
14			4·0	200	3·35	68	2·8	12	2·8	12		
15			4·15	320	3·25	54	2·8	12	3·15	43		
16			4·3	400	3·2	48	2·8	12	3·75	160		
17			4·15	320	3·25	54	2·75	10	4·25	370		
18			3·85	195	3·2	48	2·7	8	7·8	2,100		
19			3·65	130	3·2	48	2·7	8	7·25	1,820		
20			3·6	115	3·2	48	2·7	8	6·2	1,310		
21			3·65	130	3·1	38	2·7	8	5·8	1,120		
22			3·65	130	3·0	28	2·7	8	4·9	600		
23			3·5	95	3·0	28	2·7	8	4·25	370		
24			3·75	160	3·0	28	2·7	8	4·0	200		
25			4·55	520	3·0	28	2·7	8	3·75	160	4·3	400
26			4·1	300	3·0	28	2·6	4	3·75	160	4·2	350
27			4·0	200	3·0	28	2·6	4	3·85	195	4·1	300
28			3·85	195	2·95	23	2·6	4	3·85	195	4·0	200
29			3·7	145	2·9	18	2·6	4	3·7	145	3·9	215
30			3·7	145	2·9	18	2·6	4		140	4·0	200
31	3·8	175			2·9	18	2·6	4			4·3	400



MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



APPLIED IMAGE Inc
1653 East Main Street
Rochester, New York 14609 USA
(716) 482 - 0300 - Phone
(716) 288 - 5989 - Fax

DAILY GAUGE HEIGHT AND DISCHARGE of Tsolum River three miles from mouth, for 1914—*Con.*

Day.	November.		December.	
	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	5·0	740	5·35	900
2	5·2	830	5·0	740
3	5·35	900	4·9	690
4	5·35	900	4·8	640
5	5·35	900	4·8	640
6	4·9	690	4·9	690
7	5·05	760	5·0	740
8	5·75	1,100	5·0	740
9	6·15	1,280	4·9	690
10	5·8	1,120	4·7	590
11	5·35	900	4·35	420
12	4·95	710	4·0	260
13	4·6	540	4·0	260
14	4·5	500	3·9	215
15	4·45	470	3·9	215
16	4·35	420	3·9	215
17	4·2	350	3·9	215
18	4·05	280	3·9	215
19	4·45	470	3·8	175
20	4·85	660	3·8	175
21	5·8	1,120	3·8	175
22	6·4	1,410	3·8	175
23	6·1	1,260	3·8	175
24	5·9	1,170	3·8	175
25	6·0	1,220	3·7	145
26	6·0	1,220	3·6	115
27	5·85	1,150	3·6	115
28	6·25	1,330	3·[illegible]	115
29	5·5	980	3·7	145
30	5·3	880	3·9	215
31	. . . . .	. . .	[illegible]·7	590

BRIDGE RIVER (1045).

Location.—Highway bridge on road to Bridge river from Mission on Seton lake. Ten miles from Mission.

Records available.—Daily discharges, October 7 to December 31, 1913; January 1 to December 31, 1914.

Drainage area.—The 1912 provincial map (scale 17.75 miles to 1 inch) shows a drainage area of 2,400 miles for the whole stream. About 1,900 miles of this is above the gauging station, which is near the site of the intake for the proposed hydro-electric plant.

Channel.—Wide and deep, sand and mud bottom, an excellent measuring section.

Discharge measurements.—Seven meter measurements were taken during 1913 and 1914. The rating curve is well defined.

Winter flow.—The stream is open all winter.

Accuracy.—A good rating curve and gauge readings twice a day, should give very accurate results, "A".

Co-operation.—Readings taken in co-operation with Bridge River Power Company.

DISCHARGE MEASUREMENTS of Bridge River 30 miles from mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft
1913.							
Oct. 7 ..	Cline & Keys ..	1,057	156	1,050	1·8	2·38	1,890[1]
1914.							
April 17.	H. J. E. Keys..	1,046	156	912	2·05	2·25	1,865
" 19	" ..	1,046	156	932	2·25	2·43	2,101
June 9......	Keys & Hughes..	1,046	156	1,422	3·56	4·75	5,130
" 20. ..	H. C. Hughes..	1,046	156	2,120	5·54	8·10	11,750
Aug. 3......	"	1,046	156	1,826	4·83	6·80	8,820
Sept. 21.	"	1,046	156	1,044	1·97	2·55	2,060

[1] Station established

MONTHLY DISCHARGE of Bridge River 30 miles from mouth, for 1914.

(Drainage area, 1,900 square miles.)

MONTH	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	860	520	667	0·35	0·40	41,000	A
February....	580	580	580	0·30	0·31	32,200	A
March	1,110	580	766	0·40	0·46	47,100	A
April..	2,140	790	1,620	0·85	0·95	96,400	A
May	9,900	2,400	5,530	2·91	3·36	340,000	A
June .	18,800	5,100	9,180	4·83	5·40	546,000	C
July..	14,900	6,400	12,200	6·42	7·40	750,000	C
August	9,200	5,300	7,760	4·08	4·70	477,000	A
September	5,700	2,100	3,520	1·85	2·06	209,000	A
October	11,100	2,000	3,790	1·99	2·29	233,000	A
November	3,650	1,570	2,010	1·06	1·18	120,000	A
December..	2,970	720	1,770	0·93	1·07	109,000	A
The year..	18,800	520	4,116	2·17	29·58	3,000,700	B

DAILY GAUGE HEIGHT AND DISCHARGE of Bridge River 30 miles from mouth, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·1	790	0·8	580	0·8	580	1·1	790	2·75	2,400	4·75	5,100
2	1·1	790	0·8	580	0·8	580	1·1	790	3·35	3,100	5·75	6,800
3	1·1	790	0·8	580	0·8	580	1·15	820	3·95	3,900	6·75	8,700
4	1·1	790	0·8	580	0·8	580	1·15	830	3·7	3,600	7·00	9,300
5	1·1	790	0·8	580	0·8	580	1·25	900	3·55	3,400	6·0	7,300
6	1·1	790	0·8	580	0·8	580	1·55	1,150	3·4	3,200	5·35	6,100
7	1·15	820	0·8	580	0·8	580	1·75	1,340	3·4	3,200	5·15	5,800
8	1·2	860	0·8	580	0·8	580	1·85	1,420	3·4	3,200	5·0	5,500
9	1·2	860	0·8	580	0·8	580	1·90	1,470	3·45	3,200	4·8	5,200
10	1·2	860	0·8	580	0·8	580	2·1	1,670	3·8	3,700	5·05	5,600
11	1·1	790	0·8	580	0·8	580	2·15	1,720	4·35	4,500	5·55	6,400
12	1·1	790	0·8	580	0·8	580	2·20	1,770	4·95	5,400	6·1	7,500
13	1·1	790	0·8	580	0·8	580	2·25	1,820	5·35	6,100	6·95	9,200
14	0·9	650	0·8	580	0·85	610	2·3	1,870	5·9	7,100	7·55	10,500
15	0·8	580	0·8	580	1·1	790	2·35	1,930	6·5	8,200	8·5	12,700
16	0·8	580	0·8	580	1·1	790	2·4	1,980	6·4	8,000	9·15	14,400
17	0·8	580	0·8	580	1·1	790	2·3	1,870	5·8	6,900	9·65	15,800
18	0·8	580	0·8	580	1·15	830	2·2	1,770	5·5	6,400	9·7	18,800
19	0·8	580	0·8	580	1·3	940	2·4	1,980	5·35	6,100	9·2	14,500
20	0·8	580	0·8	580	1·45	1,060	2·55	2,140	5·3	6,000	8·3	12,300
21	0·8	580	0·8	580	1·5	1,110	2·45	2,040	5·55	6,400	7·35	10,000
22	0·8	580	0·8	580	1·5	1,110	2·3	1,870	6·1	7,500	6·4	8,000
23	0·8	580	0·8	580	1·5	1,110	2·35	1,920	6·7	8,600	5·8	6,900
24	0·75	550	0·8	580	1·35	980	2·3	1,870	7·3	9,900	5·7	6,700
25	0·7	520	0·8	580	1·35	980	2·25	1,820	7·15	9,600	6·05	7,400
26	0·7	520	0·8	580	1·2	860	2·2	1,770	6·35	7,900	6·65	8,500
27	0·7	520	0·8	580	1·2	860	2·2	1,770	5·45	6,300	7·1	9,500
28	0·7	520	0·8	580	1·2	860	2·2	1,770	4·7	5,000	7·2	9,700
29	0·7	520	....	...	1·2	860	2·2	1,770	4·1	4,100	7·45	10,300
30	0·8	580	.	..	1·2	860	2·35	1,920	4·1	4,100	7·7	10,800
31	0·8	580	....	..	1·15	820	.	....	4·2	4,300	.	

DAILY GAUGE HEIGHT AND DISCHARGE of Bridge River 30 miles from mouth, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	8·4	12,500	5·8	6,900	5·0	5,500	3·35	3,100	3·75	3,650	2·0	1,570
2	8·95	13,300	6·6	8,400	5,0	5,500	2·95	2,600	3·5	3,300	2·0	1,570
3	9·35	14,900	6·75	8,700	5·1	5,700	2·65	2,300	3·25	2,970	2·0	1,570
4	9·7	18,800	6·8	8,800	4·45	4,600	2·50	2,100	2·0	1,570	1·9	1,470
5	9 6	15,600	6·85	8,900	4·6	4,[illegible]00	2·4	2,000	2·0	1,570	1·75	1,340
6	9·35	14,900	6·9	9,000	4·6	4,900	2·4	2,000	2·75	2,370	1·7	1,290
7	8·7	13,200	6·95	9,200	4·75	5,100	2·4	2,000	2·7	2,310	1·6	1,200
8	8·5	12 700	6·25	7,700	4·8	5,200	2·45	2,000	2·7	2,310	1·6	1,200
9	8·25	12,100	5·5	6,400	4·4	4,600	2·55	2,100	2·8	2,430	1·45	1,060
10	8·55	12,900	5·35	6,100	4·0	4,000	2·75	2,400	2·75	2,370	1·35	980
11	9·0	14,000	5·8	6,900	3·65	3,500	2 7	2,300	2·65	2,260	0·7	520
12	9·35	14,900	6·35	7,900	3·85	3,800	2·55	2,100	2 45	2,030	1·0	720
13	9·35	14,900	6·2	7,600	3·2	2,900	2·8	2,400	2·4	1,980	1·2	860
14	9·25	14,600	6 65	8,500	3·15	2,800	6·6	8,400	2·15	1,720	1·5	1,110
15	9·20	14,500	6·9	9,000	3·1	2,800	7·8	11,100	2·0	1,570	1·6	1,200
16	9·0	14,[illegible]	6·75	8,700	3·1	2,800	7·02	9,300	2·0	1,570	1·65	1,250
17	8·65	13,100	6·55	8,300	2·75	2,400	6 95	9,200	2·0	1,570	1·65	1,250
18	8·75	13,300	6·15	7,500	2·6	2,200	6·25	7,700	2·0	1,570	1·95	1,520
19	8·95	13,900	6·3	7,800	2·7	2,300	5·0	5,500	2·1	1,670	2·35	1,930
20	9·3	14,800	6·5	8,800	2·85	2,500	4·3	4,400	2·25	1,820	3·0	2,670
21	8·85	13,600	6·65	8,500	2·7	2,300	3·8	3,700	2 15	1,720	3·25	2,970
22	7·4	10,100	6·55	8,300	2·5	2,100	3·45	3,200	2·[illegible]	1,670	3·2	2,910
23	6·95	9,200	6·15	7,500	2·6	2,200	3·25	3,000	[illegible]	1,670	3·2	2,910
24	7·0	9,300	5·85	6,800	2·75	2,400	3·05	2,700	2·0	1,570	3·0	2,670
25	7·0	9,300	5·8	6,900	2·9	2,500	3·0	2,700	2·2	1,770	3·0	2,670
26	6·95	9,200	5·85	6,800	3·35	3,100	2·9	2,500	2·6	2,200	3·0	2,670
27	6·75	8,700	6·0	7,300	3·55	3,400	2·9	2,500	2·45	2,040	3·0	2,670
28	5·8	6,900	6·15	7,500	3·4	3,200	2·9	2,500	2·3	1,870	3·0	2,670
29	5·55	6,400	6·0	7,300	3·2	2,900	2·9	2,500	2·05	1,620	2·8	2,430
30	5·55	6,400	5·65	6,600	3·6	3,400	3·2	2,900	2·0	1,570	2·8	2,430
31	5·7	6,700	5·2	5,800	......	......	4·26	4,400	....	....	2·15	1,720

CAYUSE CREEK (1048).

Location.—At the Pacific Great Eastern Railway trestle, 2 miles from the mouth and 2½ miles from Lillooet.

Records Available.—Daily discharges from April 8, 1914, to December 31, 1914.

Drainage Area.—Three hundred and fifty square miles (measured from the provincial map of 1912, scale 12 miles to 1 inch.)

Gauge.—Vertical staff on pile in the trestle; referenced to three benchmarks. Daily readings.

Channel.—Wide and of moderate depth, strewn with boulders and coarse gravel. The current is very swift, especially at the higher stages. The metering section is a good one.

Discharge Measurements.—Four discharge measurements in 1914 define the rating curve very well, except for extremely high and low stages of the water.

Winter Flow.—Open water conditions all winter.

Accuracy.—Daily gauge readings combined with a well-defined rating curve should insure a reasonable degree of accuracy except possibly at extremely high stages.

Cayuse Creek (1048).

Cayuse creek rises in Duffy lake and discharges into the Fraser river, 1 mile below Lillooet, at an elevation of about 740 feet. The drainage area is about 350 square miles.

The climate in the Cayuse creek watershed is much similar to that in the Lillooet district. The summers are quite hot, and the winters rather severe. At the mouth the mean annual precipitation is probably about 15 inches, and this may increase to 30 inches or more at the higher altitudes near the headwaters.

The discharge figures indicate that there is a considerable quantity of water flowing in Cayuse creek. This water could be made use of for irrigation or for water-power.

A very small fraction of the water is being used at present for irrigation purposes on a few ranches near the mouth. The water could be used very extensively on the Fraser River benches across from Lillooet. The water could be carried, in a flume, from the stream to a point on the Fraser river about 1 mile above Lillooet and taken across the river at this point. This would be a large undertaking, but would reclaim a large tract of first-class fruit-growing land.

The stream falls very rapidly and there is a large fall about 3 miles from the mouth. Water-power could be developed by running a pipe from the head of the falls to the flats below; or the water could be carried around the hill in a flume to a point above Seton lake, and the power-house located beside the lake. The second plan would give a little less head than the first. At present there is little or no market for power in the vicinity.

The main line of the Pacific Great Eastern railway crosses the stream about 2 miles from its mouth and follows it to the Fraser river.

Discharge Measurements of Cayuse Creek above Seton Creek, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Disch
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Se
1914.							
April 8	H. J. E. Keys	1,046	67	171	2·29	0·70	
June 13	Keys & Hughes	1,046	80	326	6·53	2·30	
" 19	H. C. Hughes	1,046	90	410	8·30	2·70	
Aug. 1	"	1,046	73	275	3·49	1·60	
Sept. 17	"	1,046	70	213	1·93	0·79	

[1] Station established.

MONTHLY DISCHARGE of Cayuse Creek above Seton Creek, for 1914.

(Drainage area, 350 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.	
May	3,400	480	1,616	4·6	5·3	99,300	B
June	6,550	1,350	2,833	8·1	9·0	168,600	B
July	6,000	850	2,915	8·3	9·6	179,000	B
August	1,050	640	818	2·3	2·7	50,300	B
September	780	420	548	1·6	1·8	32,600	B
October	1,000	470	603	1·7	2·0	37,100	B
November	630	380	475	1·4	1·5	28,300	B
December	420	240	298	0·8	0·9	18,300	B

DAILY GAUGE HEIGHT AND DISCHARGE of Cayuse Creek above Seton Creek, for 1914.

DAY	April.		May.		June.		July.		August.		September.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0·9	480	2·3	2,150	2·9	4,150	1·5	850	1·2	640
2			1·2	630	2·3	2,150	3·1	4,850	1·5	850	1·15	600
3			1·4	780	2·4	2,400	3·2	5,250	1·6	950	1·1	580
4			1·5	850	2·5	2,700	3·4	6,000	1·7	1,050	1·1	580
5			1·4	780	2·4	2,400	3·3	5,600	1·7	1,050	1·1	530
6			1·3	700	2·3	2,150	3·1	4,850	1·7	1,050	0·9	470
7			1·3	700	2·2	1,900	2·8	3,750	1·7	1,050	0·9	470
8			1·3	700	2·0	1,500	2·6	3,050	1·6	950	0·9	470
9			1·3	700	1·9	1,350	2·7	3,400	1·4	780	0·95	500
10			1·5	850	1·9	1,350	2·8	3,750	1·5	850	1·0	530
11			1·6	950	2·0	1,500	2·9	4,150	1·5	850	1·0	530
12			1·75	1,100	2·1	1,700	2·8	3,750	1·5	850	0·9	470
13			2·0	1,500	2·3	2,150	2·8	3,750	1·6	950	0·9	470
14			2·3	2,150	2·9	4,150	2·7	3,400	1·6	950	0·85	450
15			2·5	2,700	3·15	5,050	2·6	3,050	1·5	850	0·85	450
16			2·3	2,150	3·45	6,180	2·5	2,700	1·5	850	0·8	420
17	0·85	450	2·1	1,700	3·55	6,550	2·4	2,400	1·45	800	0·8	420
18	0·85	450	2·2	1,900	3·40	5,980	2·5	2,700	1·4	780	1·0	530
19	0·8	420	2·1	1,700	3·15	5,050	2·6	3,050	1·4	780	1·1	580
20	0·8	420	2·2	1,900	2·85	3,950	2·4	2,400	1·4	780	1·1	580
21	0·8	420	2·2	1,900	2·5	2,700	2·1	1,700	1·4	780	1·15	600
22	0·75	400	2·3	2,150	2·2	1,900	2·1	1,700	1·4	780	1·0	530
23	0·75	400	2·4	2,400	2·0	1,500	2·0	1,500	1·3	700	1·0	530
24	0·75	400	2·7	3,400	1·9	1,350	2·0	1,500	1·3	700	1·1	580
25	0·75	400	2·5	2,700	2·1	1,700	2·0	1,500	1·3	700	1·2	640
26	0·75	400	2·4	2,400	2·2	1,900	1·9	1,350	1·2	640	1·2	640
27	0·75	400	2·3	2,150	2·3	2,150	1·8	1,200	1·2	640	1·2	640
28	0·7	390	2·3	2,150	2·5	2,700	1·8	1,200	1·2	640	1·1	580
29	0·65	370	2·2	1,900	2·6	3,050	1·7	1,050	1·2	640	1·2	640
30	0·9	480	2·2	1,900	2·8	3,750	1·5	850	1·25	660	1·4	780
31	..		2·3	2,150	..		1·5	850	1·2	640	.....	....

DAILY GAUGE HEIGHT AND DISCHARGE of Cayuse Creek above Seton Creek, for 1914—*Con.*

Day.	October.		November.		December	
	Gauge Height.	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·2	640	1·2	630	0·8	[illegible]
2	1·2	640	1·2	630	0·7	[illegible]
3	1·15	600	1·2	630	0·7	[illegible]
4	1·1	570	1·2	630	0·7	[illegible]
5	1·0	530	1·1	570	0·7	[illegible]
6	1·0	530	1·0	530	0·7	[illegible]
7	1·0	530	1·0	530	0·6	[illegible]
8	0·95	500	1·0	530	0·6	[illegible]
9	0·9	480	1·0	530	0·6	[illegible]
10	0·9	480	1·0	530	0·6	[illegible]
11	0·9	480	1·0	530	0·5	[illegible]
12	0·9	480	1·0	530	0·4	[illegible]
13	0·95	500	0·9	480	0·3	[illegible]
14	1·0	530	0·7	380	0·2	[illegible]
15	1·1	570	0·7	380	0·2	[illegible]
16	1·3	700	0·7	380	0·3	[illegible]
17	1·65	1,000	0·7	380	0·3	[illegible]
18	1·6	950	0·7	380	0·2	[illegible]
19	1·5	850	0·7	380	0·2	[illegible]
20	1·4	780	0·7	380	0·3	[illegible]
21	1·3	700	0·7	380	0·4	[illegible]
22	1·2	640	0·7	380	0·4	[illegible]
23	1·2	640	0·7	380	0·4	[illegible]
24	1·0	530	0·7	380	0·4	[illegible]
25	1·0	530	0·7	380	0·3	[illegible]
26	1·0	530	0·9	480	0·3	[illegible]
27	1·0	530	0·9	480	0·3	[illegible]
28	1·0	530	0·9	480	0·3	[illegible]
29	0·9	470	0·9	480	0·2	[illegible]
30	1·2	630	0·9	480	0·2	[illegible]
31	1·2	630	......	.	0·2	[illegible]

CHEKAMUS RIVER (1034).

Location.—Highway bridge about 1 mile from the mouth and 10 miles from Squamish.

Records Available.—Daily discharges from March 11 to December 31, 1914.

Drainage Area.—Measured from Provincial map dated 1912 (scale 17.75 miles to 1 inch). Area above measuring section is 250 square miles.

Gauge.—Chain gauge from highway bridge. Referenced to three bench-marks. Readings daily.

Channel.—Wide and shallow. The bed is rough and strewn with boulders.

Discharge Measurements.—Seven discharge measurements were taken during 1914 and the winter of 1915.

Winter Flow.—Open water conditions.

Accuracy.—B. and C.

DISCHARGE MEASUREMENTS of Cheakamus River near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
1914.							
May 21	Keys and Hughes	1046	140	555	7·87	4·30	4,370
June 23	C. G. Cline	1933	140	490	5·80	3·60	2,840
Sept 2	H. C. Hughes	1152	140	383	5·38	3·28	2,060
Oct 8	"	1933	140	300	4·67	2·35	1,400
Nov 24	Dobbie and Hughes	1056	140	473	2·96	3·75	2,410*

* Channel may have changed during freshet in October.

MONTHLY DISCHARGE of Cheakamus River at one mile from mouth, for 1914.

(Drainage area, 250 square miles.)

Month.	Discharge in Second Feet.				Run Off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.	
April	5,550	1,150	2,618	10·4	11·6	156,000	B
May	6,750	2,450	4,250	17·0	19·6	261,000	B
June	8,120	2,080	4,333	17·3	19·3	258,000	C
July	8,250	2,450	5,020	20·1	23·2	309,000	C
August	4,600	2,300	3,200	12·8	14·8	197,000	B
September	6,170	1,190	2,011	8·0	9·0	120,000	B
October	14,500	1,070	4,080	16·3	18·8	251,000	C
November	8,620	950	3,338	13·3	14·8	198,000	B
December	1,770	550	790	3·2	3·6	48,600	C

DAILY GAUGE HEIGHT AND DISCHARGE of Cheakamus River at one mile from mouth, for 1914.

DAY.	March.		April.		May.		June.		July.		August	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1		....	2·8	1,770	3·4	2,690	4·55	4,960	5·2	6,500	3·3	[illegible]
2		....	2·6	1,530	4·0	3,750	4·55	4,960	5·4	7,000	3·4	[illegible]
3		....	2·4	1,330	4·3	4,400	4·35	4,520	5·7	7,750	3·9	[illegible]
4		.	2·2	1,150	3·8	3,350	3·95	3,650	5·9	8,250	3·9	[illegible]
5	..	..	4·4	4,600	3·8	3,350	3·55	2,880	5·4	7,000	3·7	[illegible]
6		..	3·8	3,350	3·6	2,950	3·45	2,690	5·4	7,000	3·7	[illegible]
7	..	..	3·1	2,150	3·5	2,800	3·45	2,690	4·9	5,800	3·9	[illegible]
8	..	.	3·1	2,150	3·5	2,800	3·05	2,080	4·9	5,800	3·9	[illegible]
9		...	3·1	2,150	3·6	2,950	3·05	2,080	4·5	4,850	3·9	[illegible]
10	.	....	3·1	2,150	4·0	3,750	3·05	2,080	4·9	5,800	3·9	[illegible]
11	1·7	800	3·1	2,150	4·0	3,750	3·25	2,370	4·9	5,800	3·8	[illegible]
12	1·7	800	3·0	2,020	4·4	4,600	3·75	3,250	4·9	5,800	4·2	[illegible]
13	2·5	1,440	3·2	2,300	4·7	5,300	4·35	4,520	4·9	5,800	4·4	[illegible]
14	4·2	4,150	4·8	5,550	4·9	5,800	4·75	5,420	4·9	5,800	4·4	[illegible]
15	3·0	2,020	4·8	5,550	5·3	6,750	5·05	6,170	4·4	4,600	4·4	[illegible]
16	3·5	2,800	4·0	3,750	5·3	6,750	5·25	6,630	4·4	4,600	3·9	[illegible]
17	2·7	1,650	3·7	3,150	4·4	4,600	5·85	8,120	4·9	5,800	3·9	[illegible]
18	2·8	1,770	3·0	2,020	4·4	4,600	4·95	5,920	4·8	5,550	3·7	[illegible]
19	3·0	2,020	6·0	8,520	4·4	4,600	4·95	5,920	4·8	5,550	3·7	[illegible]
20	3·0	2,020	4·0	3,750	4·4	4,600	4·55	4,960	4·3	4,400	3·5	[illegible]
21	3·0	2,020	3·6	2,950	4·6	5,100	4·25	4,260	4·1	3,950	3·5	[illegible]
22	3·0	2,020	3·0	2,020	4·8	5,550	3·55	2,880	3·9	3,550	3·4	[illegible]
23	3·0	2,020	2·9	1,890	5·1	6,250	3·55	2,880	3·9	3,550	3·4	[illegible]
24	2·7	1,650	2·5	1,430	5·0	6,050	3·65	5,220	3·9	3,550	3·4	[illegible]
25	2·5	1,430	2·4	1,330	4·6	5,100	4·25	4,260	3·9	3,550	3·5	[illegible]
26	2·4	1,330	2·3	1,230	4·2	4,150	3·95	3,650	4·2	4,150	3·5	[illegible]
27	2·3	1,230	2·4	1,330	4·0	3,750	4·45	4,720	3·9	3,550	3·5	[illegible]
28	2·0	990	2·5	1,430	3·8	3,350	4·75	5,420	3·6	2,950	3·4	[illegible]
29	2·2	1,150	2·6	1,530	3·6	2,950	4·75	5,420	3·4	2,600	3·3	[illegible]
30	2·2	1,150	3·2	2,300	3·3	2,450	4·75	5,420	3·3	2,450	3·3	[illegible]
31	2·0	990	..	..	3·6	2,950	.	..	3·3	2,450	3·2	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Cheakamus River at one mile from mouth, for 1914—*Con.*

Day.	September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft
1	3·05	2,080	3·3	2,450	5·75	7,880	2·8	1,770
2	3·05	2,080	3·3	2,450	6·05	8,620	2·6	1,530
3	3·05	2,080	2·5	1,430	5·35	6,880	2·5	1,450
4	3·05	2,080	2·4	1,330	5·55	7,380	2·4	1,330
5	2·95	1,950	2·1	1,070	4·05	3,050	2·2	1,150
6	2·65	1,590	2·1	1,070	4·05	3,850	2·1	1,070
7	2·65	1,590	2·1	1·070	4·25	4,260	1·9	920
8	2·75	1,720	2·1	1,070	4·55	4,960	1·8	860
9	2·65	1,590	2·2	1,150	4·35	4,520	1·8	860
10	2·55	1,480	2·4	1,330	4·15	4,060	1·7	800
11	2·55	1,480	2·2	1,150	3·95	3,650	1·6	750
12	2·55	1,480	2·3	1,230	3·35	2,530	1·5	700
13	2·25	1,190	8·4	14,500	3·05	2,080	1·5	700
14	2·35	1,280	6·9	10,750	2·75	1,720	1·4	650
15	2·35	1,280	4·7	5,300	2·55	1,480	1·4	650
16	2·25	1,190	7·2	11,500	2·45	1,380	1·3	600
17	2·25	1,190	8·4	14 500	2·25	1,190	1·3	600
18	5·05	6,170	6·4	9,500	2·15	1,110	1·3	600
19	4·05	3,850	6·4	9,500	2·35	1,280	1·3	600
20	3·55	2,880	4·9	5,800	2·15	1,110	1·3	600
21	3·35	2,530	4·2	4,150	1·95	950	1·3	600
22	3·25	2,380	3·8	3,350	2·35	1,280	1·3	600
23	2·85	1,830	3·3	2,450	3·35	2,530	1·3	600
24	2·65	1,590	3·0	2,020	3·45	2,680	1·3	600
25	2·45	1,380	3·0	2.020	4·05	3,850	1·3	600
26	2·25	1,190	2·9	1,890	3·75	3,250	1·3	600
27	2·45	1,380	2·8	1,770	3·75	3,250	1·2	550
28	3·65	3,050	2·6	1,530	3·95	3,650	1·2	550
29	3·25	2,380	2·6	1,530	3·45	2,680	1·2	550
30	3·25	2,380	3·8	3,350	3·15	2,220	1·2	550
31	.....	.....	4·4	4,600	......	....	1·2	550

Fou[illegible] Creek (1047)

Location.—About 100 yar[illegible] above irrigation ditches, 1½ miles from the mouth, and 10 miles from [illegible].

Records Available.—Daily [illegible] rges fr[illegible]m June 11, 1914, to October 10, 1914, (irrigation season).

Drainage Area.—Twenty [illegible] (measured from the provincial map of 1913, scale 12 miles to 1 in[illegible]

Gauge.—Vertical staff naile[illegible] about 100 yards above ditch[illegible]. Referenced to three bench-marks. Re[illegible]ings daily.

Channel.—Wide and shallow, [illegible]avel bottom. The current is fairly fast. The metering section is a good on[illegible]

Discharge Measurements.—Tw[illegible] [illegible]charge measurements in 1914 define the rating curve fairly well for th[illegible] va[illegible]ions during the irrigation season.

Winter Flow.—Measurements m[illegible] only [illegible]ing the irrigation season.

Accuracy.—D.

FOUNTAIN CREEK (1047).

Fountain creek has its source in Fountain lake, and discharges into the Fraser river, about 9 miles above Lillooet, at an elevation of some 760 feet. The drainage area is about 20 square miles.

The climate in the Fountain Creek valley is much similar to that of the Lillooet district generally. The summers are hot and the winters rather severe. The mean annual precipitation in the watershed is about 10 inches.

The valley of Fountain creek and the adjacent benches on the Fraser river are well adapted to cultivation, when irrigated, and the water from the creek is used for this purpose. Some attempt has been made to regulate the normal flow to give sufficient water in the low-water season. A small timber dam was installed at the outlet of the lake. In this way the spring and early summer freshets are stored to be used in the late summer when the normal flow is very small. The dam has a sluice-gate in it, and when it is opened the water flows down the natural channel of the stream to the irrigation ditches. This storage scheme could be enlarged upon to a considerable extent.

There is a large ranch at the mouth of the creek called Fountain ranch. It is a splendid place, and a good example of the agricultural possibilities of the surrounding valley.

There is some good timber in the upper part of the valley. A small sawmill has been built on the lake.

The gauging station was established on June 11, 1914. The regulated flow of the stream is at it. Several water leases have been applied for to divert water from the stream above the gauge. These diversions, will in all probability, be made next spring, so the gauging station may have to be changed.

DISCHARGE MEASUREMENTS of Fountain Creek above intake on irrigation ditch, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section	Mean Velocity.	Gauge Height	Disch
1914.			Feet.	Sq. ft.	Ft. per sec	Feet	Se
June 11[1]	Keys & Hughes	......	......	......	......		
Aug. 2	H. C. Hughes	1046	10	5·35	2·57	1·00	[illegible]
Sept 20	"	1046	10	3·50	1·99	0·87	[illegible]

[1] Station established.

MONTHLY DISCHARGE of Fountain Creek above irrigation ditches, for 1914.

(Drainage area, 20 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	T acre
July	20	4	16·6	0·8	0·9	[illegible]
August	20	4	10·5	0·5	0·6	[illegible]
September	8	1	6·0	0·3	0·3	[illegible]

Accuracy "D."

Daily Gauge Height and Discharge of Fountain Creek above irrigation ditches, for 1914.

Day.	June.		July.		August.		September.		October.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	....	......	1·1	20	1·0	14	0·8	4	0·9	8
2	....	......	1·1	20	1·0	14	0·8	4	0·9	8
3	....	......	1·1	20	1·0	14	0·8	4	0·9	8
4	....	......	1·0	14	1·1	20	0·8	4	0·9	8
5	....	......	1·1	20	1·0	14	0·8	4	0·9	8
6	....	......	1·1	20	1·0	14	0·8	4	0·9	8
7	....	......	1·1	20	1·0	14	0·8	4	0·9	8
8	....	......	1·1	20	1·0	14	0·8	4	0·9	8
9	....	......	1·1	20	0·8	4	0·8	4	0·9	8
10	....	......	1·1	20	1·1	20	0·7	1	0·9	8
11	....	......	1·1	20	1·0	14	0·7	1	......	......
12	1·3	32	1·0	14	1·0	14	0·7	1	......	......
13	1·3	32	1·0	14	1·0	14	0·8	4	......	......
14	1·4	30	1·0	14	0·9	8	0·9	8	......	......
15	1·3	32	1·0	14	0·9	8	0·9	8	......	......
16	1·2	26	1·0	14	0·9	8	0·9	8		
17	1·3	32	0·9	8	0·9	8	0·9	8		
18	1·3	32	1·2	26	1·0	14	0·9	8		
19	1·1	20	1·0	14	1·0	14	0·9	8		
20	1·1	20	1·0	14	1·0	14	0·9	8		
21	1·1	20	1·0	14	0·9	8	0·9	8		
22	1·1	20	1·0	14	0·9	8	0·9	8		
23	1·2	26	1·2	26	0·9	8	0·9	8		
24	1·2	26	1·1	20	0·9	8	0·9	8		
25	1·1	20	1·0	14	0·9	8	0·9	8		
26	1·1	20	1·0	14	0·9	8	0·9	8		
27	1·1	20	1·0	14	0·8	5	0·9	8		
28	1·2	26	0·8	4	0·8	4	0·9	8		
29	1·2	26	1·1	20	0·8	4	0·9	8		
30	1·2	26	1·0	14	0·8	4	0·9	8		
31			1·0	14	0·8	4				

GREEN RIVER AT NAIRN FALLS (1035).

Location.—Five miles from the mouth, and 46 miles from Cheakamus.

Records available.—Daily discharges, November and December, 1913; January to December, 1914.

Drainage area.—Drainage areas are measured from the provincial map of 1912 (scale 17·7 miles to 1 inch). Area above gauging station is 180 square miles.

Gauge.—Sloping staff gauge bolted to rocks about 150 yards above falls on left bank. Referenced to three bench-marks. Readings taken daily.

Channel.—Wide and fairly deep. Rock and gravel bottom, a good metering tion.

Discharge measurements.—Twelve meter measurements taken during 1913, 14 and 1915 defining the curve quite well for all except the very highest stages.

Winter flow.—Stream is open all year. Slight ice effect in very cold weather.

Accuracy.—Curve fairly well defined; daily gauge readings.

DISCHARGE MEASUREMENTS of Green River above Nairn Falls, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1913.			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
Nov. 18	Keys & Cline	1046	84	264	3·4	3·80	918[1]
1914.							
June 1	Keys & Hughes	1046	100	566	4·4	6·50	2,530
July 16	H. C. Hughes	1046	105	827	5·7	8·75	4,710
Aug. 11	do	1046	98	658	4·2	6·60	2,780
Sept. 8	do	1046	92	533	3·6	5·88	1,938
Nov. 26	Dobbie & Hughes	1057	87	503	4·7	6·20	2,390
Dec. 28	E. C. Dobbie	1057	73	203	1·6	2·60	370[2]
1915.							
Jan. 21	E. C. Dobbie	1057	78	185	1·2	2·10	231
Feb. 6	Hughes & Dobbie	1057	78	167	1·4	2·15	238
Mar. 9	E. C. Dobbie	1057	78	202	1·6	2·35	327
Mar. 14	do	1057	78	230	1·9	2·68	441
Mar 15	do	1057	78	354	3·2	4·25	1,140

[1] Station established.

[2] Section probably affected by ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Nairn Falls, for 1913.

Day.	November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	....	....	2·1	240
2	....	....	2·3	[illegible]
3	....	....	2·3	[illegible]
4	....	....	2·2	[illegible]
5	....	....	2·1	240
6	....	....	2·0	[illegible]
7	....	....	2·1	[illegible]
8	....	....	2·0	[illegible]
9	....	....	1·7	[illegible]
10	....	....	1·7	[illegible]
11	....	....	1·8	[illegible]
12	....	....	1·8	[illegible]
13	....	....	1·9	[illegible]
14	....	....	2·0	[illegible]
15	....	....	2·3	[illegible]
16	....	....	2·4	[illegible]
17	....	....	2·4	[illegible]
18	....	....	2·3	[illegible]
19	....	....	2·2	[illegible]
20	2·4	330	1·9	[illegible]
21	2·4	330	1·8	[illegible]
22	2·5	360	1·8	[illegible]
23	2·5	360	1·8	[illegible]
24	2·3	300	1·8	[illegible]
25	2·1	240	1·8	[illegible]
26	2·2	270	1·8	[illegible]
27	2·1	240	1·8	[illegible]
28	2·3	300	1·8	[illegible]
29	2·3	300	1·7	[illegible]
30	2·3	300	1·7	[illegible]
31	....	....	1·7	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Nairn Falls, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·7	120	1·7	120	2·2	270	3·5	750	6·0	2,200	6·3	2,440
2	1·7	120	1·7	120	2·2	270	3·5	750	......	......	5·9	2,120
3	1·8	150	1·7	120	2·4	330	3·6	800	......	......	5·7	1,980
4	2·1	240	1·7	120	2·4	330	3·9	940	......	......	5·5	1,850
5	2·6	400	1·7	120	2·4	330	5·5	1,850	......	......	3·8	890
6	4·0	990	1·7	120	2·5	360	5·6	1,910	......	......	3·1	580
7	3·8	890	1·7	120	2·6	400	5·6	1,910	......	......	3·9	940
8	3·5	750	1·7	120	2·6	400	5·6	1,910	......	......	4·3	1,150
9	2·9	500	1·7	120	2·6	400	5·7	1,980	......	......	6·3	2,440
10	2·6	400	1·7	120	2·6	400	5·7	1,980	......	......	6·5	2,600
11	2·5	360	1·7	120	2·6	400	5·7	1,980	......	......	6·9	2,950
12	2·5	360	1·7	120	2·7	430	5·9	2,120	......	......	7·2	3,200
13	2·4	330	1·8	150	3·5	750	6·0	2,200	......	......	9·1	5,050
14	2·4	330	1·9	180	4·1	1,050	6·1	2,280	......		9·2	5,150
15	2·1	240	1·9	180	3·6	800	6·1	2,280	......	......	9·9	5,850
16	2·0	210	1·9	180	3·8	890	6·0	2,200	......	......	10·1	6,000
17	2·0	210	1·9	180	3·7	850	6·0	2,200	5·[illegible]	2,120	10·2	6,100
18	2·0	210	1·9	180	4·4	1,200	6·0	2,200	6·0	2,200	10·1	6,000
19	2·0	210	2·0	210	4·7	1,350	6·0	2,200	4·5	1,250	8·9	4,900
20	1·9	180	2·0	210	5·1	1,580	6·0	2,200	3·8	890	8·3	4,300
21	1·9	180	2·0	210	5·1	1,580	5·9	2,120	4·3	1,150	7·3	3,300
22	1·8	150	2·0	210	5·1	1,580	5·8	2,050	4·1	1,050	7·3	3,300
23	1·8	150	2·0	210	5·3	1,710	5·7	1,980	4·1	1,050	7·0	3,050
24	1·8	150	2·1	240	5·0	1,520	5·6	1,910	5·3	1,710	6·9	2,950
25	1·8	150	2·1	240	4·7	1,350	5·5	1,850	6·3	2,440	7·8	3,800
26	1·7	120	2·2	270	4·4	1,200	5·5	1,850	5·8	2,050	8·0	4,000
27	1·7	120	2·2	270	4·1	1,050	5·5	1,850	4·5	1,250	8·0	4,000
28	1·7	120	2·2	270	4·0	990	5·0	1,520	4·1	1,050	8·3	4,300
29	1·7	120	......	......	3·9	940	5·2	1,650	4·6	1,300	8·7	4,700
30	1·7	120	......	......	3·8	890	5·3	1,710	5·3	1,710	9·9	5,850
31	1·7	120	......	......	3·6	800	......	......	5·7	1,980	......	......

DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Nairn Falls, for 1914—Con.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	10·1	6,000	6·3	2,440	6·3	2,440	5·9	2,120	7·5	3,500	5·1	1,580
2	10·1	6,000	6·3	2,440	6·3	2,440	5·2	1,650	6·8	2,850	...	...
3	10·9	6,800	6·4	2,510	6·3	2,440	4·7	1,350	5·9	2,120	4·5	1,250
4	11·0	6,900	6·9	2,950	6·3	2,440	4·1	1,050	5·5	1,850	3·9	940
5	10·7	6,600	7·0	3,050	6·3	2,440	3·9	940	5·0	1,520	...	
6	9·1	5,050	7·4	3,400	6·3	2,440	3·6	800	4·8	1,400	...	
7	8·7	4,700	7·3	3,300	5·3	1,710	3·4	710	4·7	1,350	...	
8	8·3	4,300	6·9	2,950	5·3	1,710	3·2	620	4·8	1,400	...	
9	8·3	4,300	6·7	2,760	5·2	1,650	4·3	1,150	4·9	1,460	...	
10	9·1	5,050	6·7	2,760	5·5	1,850	4·6	1,300	4·7	1,350	...	
11	9·2	5,150	6·6	2,670	5,7	1,980	4·3	1,150	4·6	1,300	...	...
12	9·3	5,250	6·6	2,670	5·2	1,650	4·0	990	4·5	1,250	...	
13	9·3	5,250	7·2	3,200	5·0	1,520	10·5	6,400	4·5	1,250	2·9	500
14	9·3	5,250	7·4	3,400	5·0	1,520	10·0	5,900	4·4	1,200	2·95	520
15	9·3	5,250	7·2	3,200	4·8	1,400	12·3	8,200	4·3	1,150	2·9	500
16	8·9	4,900	7·2	3,200	...	...	13·8	9,700	4·1	1,050	2,85	480
17	8·9	4,900	6·9	2,950	...	...	12·5	8,400	4·0	990	3·0	540
18	8·9	4,900	6·9	2,950	...	...	8·5	4,500	3·9	940	3·2	620
19	8·9	4,900	6·9	2,950	...	...	8·0	4,000	4·0	990	3·0	540
20	8·9	4,900	6·9	2,950	...	...	7·3	3,300	4·2	1,100	3·0	540
21	8·	4,100	6·9	2,950	...	...	6·5	2,600	4·3	1,150	3·0	540
22	7·3	3,300	6·9	2,950	...	...	5·5	1,850	4·5	1,250	2·9	500
23	7·3	3,300	6·9	2,950	...	...	4·7	1,350	4·5	1,250	2·85	480
24	7·4	3,400	6·9	2,950	...	...	4·1	1,050	4·6	1,300	2·8	470
25	7·3	3,300	6·7	2,760	...	...	4·8	1,400	8·6	4,600	2·8	470
26	7·3	3,300	6·5	2,600	...	...	4·9	1,460	6·3	2,440	2·7	430
27	7·1	3,150	6·7	2,760	...	...	5·1	1,580	3·7	850	2·6	400
28	6·3	2,440	6·7	2,760	...	...	5·9	2,120	3·8	890	2·6	400
29	6·3	2,440	6·3	2,440	...	...	7·5	3,500	3·7	850	2·5	360
30	6·3	2,440	6·3	2,440	...	...	6·8	2,850	4·6	1,300	2·5	360
31	6·3	2,440	6·3	2,440	...	...	6·7	2,760	..	..	2·5	360

MONTHLY DISCHARGE of Green River at Nairn Falls, for 1913.

(Drainage area, 180 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
December	330	120	200	1·1	1·3	12.

Accuracy "B".

MONTHLY DISCHARGE of Green River at Nairn Falls, for 1914.

(Drainage area, 180 square miles.)

Month.	Discharge in Second-feet.				Run-Off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.	
January	990	120	280	1·5	1·7	17,200	B
February	270	120	172	0·9	1·0	9,550	B
March	1,710	270	851	4·7	5·4	52,300	B
April	2,280	750	1,838	10·2	11·4	109,000	B
May	.....	.....	.....	.....	.....	.....	.....
June	6,100	580	3,524	19·6	21·9	209,000	B
July	6,900	2,440	4,515	25·1	28·9	277,000	B
August	3,400	2,440	2,861	15·9	18·3	176,000	B
September	.....	.....	.....	.....	.....	.....	.....
October	9,700	620	2,800	15·6	17·9	172,000	C
November	4,600	850	1,530	8·5	9·5	91,000	B
The period	9,700	120					

GREEN RIVER AT GREEN LAKE (1041).

Location.—Highway bridge at mouth of the lake, 42 miles from Squamish.

Records available.—Daily discharges from January to December, 1914.

Drainage area.—Twenty-four square miles; measured from the provincial map of 1912 (scale 3 miles to 1 inch).

Gauge.—Graduated staff. Readings taken by measuring to water surface, from permanent point on the bridge.

Channel.—Narrow and fairly deep. Strewn with boulders.

Discharge measurements.—Six discharge measurements define the rating curve fairly well.

Winter flow.—Open all winter.

Accuracy.—C and D; change in section ——

DISCHARGE MEASUREMENTS of Green River at Green Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Nov. 22	H. J. E. Keyes	1,046	26	51·3	3·00	1·32	152[1]
1914							
March 17	do	1,046	33	58·0	2·71	1·47	157[2]
May 28	Keys & Hughes	1,046	37	96·6	4·37	2·00	422
July 21	H. C. Hughes	1,046	39	93·0	5·62	2·32	522
Aug. 15	do	1,046	39	89·2	4·90	2·15	435
Sept. 10	do	1,046	34	73·1	2·92	1·35	215
Dec. 5	Dobbie & Hughes	1,057	40	102·0	2·38	1·80	243[3]

[1] Station established, gauge not referenced. [2] Surface measurement, former gauge gone; new gauge put in and referenced. [3] Channel changed by freshet and logs wedged under bridge.

MONTHLY DISCHARGE of Green River at Green Lake, for 1914.

(Drainage area, 24 square miles.)

Month.	Discharge in Second-feet.				Run-Off.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total acre-feet.	
January	700	145	245	10·2	11·8	15,100	C
February	180	120	137	5·7	6·0	7,610	D
March	520	145	270	11·2	12·9	16,600	C
April	1,000	220	598	24·9	27·8	35,580	D
May	850	310	635	26·2	30·3	39,000	D
June	1,150	400	648	27·0	30·1	38,600	D
July	1,150	440	764	31·9	36·8	47,000	D
August	560	310	399	16·6	19·1	24,500	C
September	600	160	267	11·1	12·4	15,900	C
October	1,650	160	567	23·6	27·2	34,900	D
November	1,080	220	440	18·3	20·4	26,200	D
December	530	90	154	6·4	7·4	9,500	C
The year	1,650	90	427	17·8	[illegible]42·2	310,490	C

DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Green Lake, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·10	160	1·20	180	1·00	145	1·60	280	2·80	750	2·[illegible]	520
2	1·10	160	1·20	180	1·00	145	1·50	250	2·70	700	2·70	700
3	1·20	180	1·10	160	1·00	145	1·40	220	2·80	750	2·80	750
4	1·30	200	1·10	160	1·00	145	1·40	220	2·60	650	2·60	650
5	1·60	280	1·00	145	1·00	145	1·10	310	2·60	650	2·30	520
6	2·10	440	1·00	145	1·00	145	2·40	560	2·70	700	2·10	440
7	2·60	650	1·10	160	1·00	145	2·30	520	2·80	750	2·10	[illegible]
8	2·70	700	0·90	130	1·00	145	2·30	520	2·80	750	2·00	400
9	2·50	600	0·90	130	1·00	145	2·30	520	2·90	800	2·00	[illegible]
10	1·90	370	0·90	130	1·10	160	2·40	560	2·90	800	2·00	400
11	1·70	310	0·90	130	1·20	180	2·50	600	2·90	800	2·00	400
12	1·40	220	0·90	130	1·20	180	2·50	600	3·00	850	2·30	[illegible]
13	1·30	200	0·80	120	1·30	200	2·50	600	3·00	850	2·60	[illegible]
14	1·30	200	0·90	130	1·40	220	2·60	650	2·80	750	2·70	[illegible]
15	1·30	200	0·90	130	1·40	220	2·60	650	2·80	750	3·0[illegible]	[illegible]
16	1·30	200	0·90	130	1·40	220	2·50	600	2·60	650	3·30	[illegible]
17	1·20	180	0·90	130	1·50	250	2·85	780	2·50	600	3·60	[illegible]
18	1·20	180	0·90	130	1·60	280	2·70	700	2·50	600	3·30	[illegible]
19	1·20	180	0·90	130	1·80	340	3·30	1,000	2·50	600	3·10	[illegible]
20	1·10	160	0·90	130	2·00	400	3·05	870	2·45	580	2·80	[illegible]
21	1·10	160	0·90	130	2·10	440	3·05	870	2·45	580	2·50	[illegible]
22	1·20	180	0·80	120	2·10	440	2·90	800	2·45	580	2 40	[illegible]
23	1·20	180	0·80	120	2·30	520	2·80	750	2·40	560	2·30	[illegible]
24	1·10	160	0·80	120	2·20	480	2·80	750	2·40	560	2·30	[illegible]
25	1·10	160	0·90	130	2·10	440	2·60	650	2·40	560	2·50	[illegible]
26	1·10	160	0·90	130	2·10	440	2·60	650	2·30	520	2·50	[illegible]
27	1 00	145	1·00	145	2·00	400	2·60	650	2·00	480	2·50	[illegible]
28	1·00	145	1·00	145	1·90	370	2·50	600	2·00	480	2·70	[illegible]
29	1·10	160		.....	1·80	340	2·50	600	1·70	310	2·80	[illegible]
30	1·20	180		....	1·70	310	2·50	600	1·80	340	3·00	[illegible]
31	1·20	180	...	....	1·60	280	..	...	1·90	370	..	

Daily Gauge Height and Discharge of Green River at Green Lake, for 1914 —*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·90	800	2·10	440	1·10	160	1·60	280	3·20	950	2·05	310
2	3·10	900	2·10	440	1·20	180	1·90	370	3·45	1,080	2·65	530
3	3·50	1,100	2·10	440	1·10	160	2·50	600	3·05	690	2·35	410
4	3·60	1,150	2·00	400	1·10	160	2·30	520	2·65	530	2·15	340
5	3·60	1,150	2·00	400	1·20	180	2·10	440	2·45	450	1·80	240
6	3·10	900	2·10	440	1·10	160	1·40	220	2·35	410	1·60	190
7	3·00	850	2 30	520	1·20	180	0·90	130	2·35	410	1·60	190
8	2·90	800	2·40	560	1·30	200	1·30	200	2·45	450	1·50	170
9	2·90	800	2·30	520	1·40	220	1·30	200	2·45	450	1·50	170
10	3·00	850	2·30	520	1·30	200	1·10	160	2·25	380	1·40	150
11	3·00	850	2·20	480	1·30	200	1·20	180	2·25	380	1·20	110
12	2·90	800	2·20	480	1·30	200	2·00	400	2·15	340	1·20	110
13	3·20	950	2·10	440	1·10	160	2·60	650	2·25	380	1·10	90
14	3·40	1,050	2·10	440	1·10	160	3·20	950	2·05	310	1·30	130
15	3·10	900	2·10	440	1·10	160	2·60	650	2·05	310	1·30	130
16	3·00	850	2·00	400	1·10	160	3·30	1,000	2·05	310	1·30	130
17	3·00	850	2·00	400	1·70	310	4·60	1,650	1·95	280	1·20	110
18	3·10	900	1·90	370	2·30	520	3·60	1,150	1·85	260	1·20	110
19	3·10	900	1·90	370	2·50	600	3·40	1,050	1·85	260	1·20	110
20	2·90	800	1·80	340	2·20	480	3·10	900	1·75	220	1·10	90
21	2·60	650	1·80	340	1·80	340	2·80	750	1·75	220	1·00	75
22	2·30	520	1·90	370	1·60	280	2·30	520	1·95	280	1·00	75
23	2·30	520	1·70	310	1·50	250	2·40	560	2·35	410	1·10	90
24	2·30	520	1·70	310	1·50	250	2·20	480	2·65	530	1·10	90
25	2·20	480	1·80	340	1·50	250	2·30	520	2·95	650	1·10	90
26	2·20	480	1·70	310	1·60	280	2·20	480	3·05	690	1·10	90
27	2·20	480	1·70	310	1·70	310	2·30	520	2·65	530	1·10	90
28	2·10	440	1·80	340	1·80	340	2·20	480	2·25	380	1·10	90
29	2·20	480	1·80	340	1·90	370	2·10	410	2·15	340	1·10	90
30	2·20	480	1·70	310	2·50	600	2·20	480	2·05	310	1·10	90
31	2·20	480	1·50	250	....	....	2·60	650	......	....	1·10	90

Laluwissin Creek (1050).

Location.—Above the irrigation ditches about 1 mile from the mouth and 26 miles from Lillooet.

Records available.—Daily discharges from June 17, 1914, to September 30, 1914, discontinued at end of irrigation season.

Drainage Area.—Twenty square miles (measured from the provincial map of 1913, scale 12 miles to 1 inch).

Gauge.—Vertical staff gauge about 200 yards above irrigation ditches, referenced to three bench-marks. Readings daily.

Channel.—Wide and shallow, strewn with boulders and coarse gravel. The current is fairly swift. The metering section is quite a good one.

Discharge Measurements.—Three discharge measurements in 1914 define the rating curve fairly well for the two and intermediate stages of the water.

Winter Flow.—Measurements made only during the irrigation season.

Accuracy.—Daily gauge readings combined with a fairly well-defined rating curve should ensure a fair degree of accuracy for the variation during the irrigation season.

LALUWISSIN CREEK (1050).

Laluwissin creek has its source in the mountains to the south-east of Lillooet. Some of the peaks in its vicinity attain an altitude of 6,800 feet. It discharges into the Fraser river 26 miles below Lillooet at an elevation of 450 feet. The drainage area is 25 square miles.

The climate in the Laluwissin creek watershed is much similar to that of the Lillooet district generally. The summers are quite hot and the winters rather severe. The mean annual precipitation in the valley is about 10 inches.

The Fraser river benches near the mouth of Laluwissin creek are well suited to cultivation. At present most of the normal flow of the stream is being used to irrigate these benches. No attempt has yet been made to store the high-water flow which occurs during the spring and early summer. It is reported that the upper part of the stream runs through large swamps and meadows, and it is very probable that these meadows could be utilized as storage reservoirs; a pack trail follows the stream up to the meadows.

DISCHARGE MEASUREMENTS of Laluwissin Creek above intake at irrigation ditches, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq.-ft.	Ft. per sec	Feet.	Sec.-ft
June 17	Keys and Hughes	1,046	6·0	7·95	1·62	1·40	12·9[1]
July 31	H. C. Hughes	1,046	6·0	6·20	1·05	1·00	6·5
Sept. 13	do	1,046	6·0	5·35	·88	1·00	4·7

[1] Station established

MONTHLY DISCHARGE of Laluwissin Creek above irrigation ditches, for 1914.

(Drainage area, 25 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
July	11	6	7·9	0·3	0·3	490
August	6	5	5·3	0·2	0·2	330
September	6	5	5·4	0·2	0·2	320

Accuracy "D."

DAILY GAUGE HEIGHT AND DISCHARGE of Laluwissin Creek above irrigation ditches, for 1914.

Day.	June.		July.		August.		September.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.
1			1·3	11	1·0	6	0·9	5
2			1·3	11	1·0	6	0·9	5
3			1·3	11	1·0	6	0·9	5
4			1·3	11	1·0	6	0·9	5
5			1·3	11	1·0	6	0·9	5
6			1·3	11	1·0	6	0·9	
7			1·3	11	1·0	6	0·9	5
8			1·2	9	1·0	6	0·9	5
9			1·2	9	1·0	6	0·9	5
10			1·2	9	1·0	6	1·0	6
11			1·1	7	0·9	5	1·0	6
12			1·1	7	0·9	5	1·0	6
13			1·1	7	0·9	5	1·0	6
14			1·1	7	0·9	5	1·0	6
15			1·1	7	0·9	5	1·0	6
16			1·1	7	0·9	5	1·0	6
17			1·1	7	0·9	5	1·0	6
18	1·4	13	1·1	7	0·9	5	1·0	6
19	1·4	13	1·1	7	0·9	5	0·9	5
20	1·4	13	1·1	7	0·9	5	1·0	6
21	1·4	13	1·1	7	0·9	5	1·0	6
22	1·3	11	1·1	7	0·9	5	1·0	6
23	1·3	11	1·1	7	0·9	5	0·9	5
24	1·3	11	1·1	7	0·9	5	0·9	5
25	1·4	13	1·0	6	0·9	5	0·9	5
26	1·4	13	1·0	6	0·9	5	0·9	5
27	1·4	13	1·0	6	0·9	5	0·9	5
28	1·4	13	1·0	6	0·9	5	0·9	5
29	1·3	11	1·0	6	0·9	5	0·9	5
30	1·3	11	1·0	6	0·9	5	0·9	5
31			1·0	6	0·9	5		

LILLOOET RIVER (1038).

Location.—Government highway bridge at Agerton, 57 miles from Cheakamus, 8 miles above Lillooet lake, and 2 miles above the mouth of Green river.

Records Available.—Daily discharges.—November 16 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—Above mouth is 2,200 square miles; above the lower end of Lillooet lake, 1,600 square miles; above upper end of lake, 1,300 square miles; above gauging station, 800 square miles.

Gauge.—Vertical staff gauge nailed to central pier of bridge. Referenced to three bench-marks. Gauge readings taken daily.

Channel.—Wide and deep, smooth, sandy bed. An excellent measuring section.

Discharge Measurements.—Five discharge measurements taken during 1914 define the curve very well for all stages of the water.

Winter Flow.—The stream is sometimes frozen over in winter.

Accuracy.—Rating curve well defined and daily gauge readings give good accuracy.

DISCHARGE MEASUREMENTS of Lillooet River near Agerton above lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1913.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Nov. 16	Keys & Cline	1046	168	645	2·03	1·83	1,693[1]
1914.							
March 28	H. J. E. Keys	1046	174	636	2·42	1·97	1,540
May 31	Keys & Hughes	1046	185	1,380	3·54	4·92	4,880
June 28	Hughes	1046	188	2,063	4·37	7·60	9,000
Aug. 10	do	1046	187	1,831	4·00	6·76	7,400
July 15	do	1046	188	2,692	6·15	10·4	16,500

[1] Station established.

MONTHLY DISCHARGE of Lillooet River 6 miles above Lillooet Lake, for 1914.

(Drainage area, 800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	1,480	950	1,280	1·60	1·84	79,000	B
February	980	950	960	1·20	1·25	53,000	B
March	2,670	980	1,770	2·21	2·55	109,000	B
April	3,750	1,730	2,860	3·57	3·98	170,000	B
May	9,250	3,750	5,870	7·34	8·46	361,000	B
June	16,500	4,930	9,140	11·42	12·74	544,000	B
July	18,300	6,800	13,010	16·25	19·98	799,000	C
August	14,700	7,500	10,560	13·20	15·22	648,000	B
September	7,850	3,200	5,030	6·29	7·02	299,000	B
October	19,200	2,670	6,590	8·24	9·50	405,000	B
November	4,930	2,470	3,540	4·42	4·93	211,000	B
December	3,200	1,480	1,890	2·36	2·71	116,000	B
The year	19,200	950	5,270	6·51	90·18	3,794,000	B

DAILY GAUGE HEIGHT AND DISCHARGE of Lillooet River 6 miles above Lillooet Lake, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·5	1,330	Frozen	950	1·0	980	2·0	1,730	4·0	3,750	6·0	6,250
2	1·6	1,400		950	1·4	1,260	2·0	1,730	4·8	4,690	7·5	8,820
3	1·6	1,400	..	950	1·4	1,260	2·0	1,730	4·6	4,440	8·0	9,970
4	1·6	1,400	.	950	1·4	1,260	2·0	1,730	4·5	4,320	7.5	8,820
5	1·6	1,400	...	950	1·4	1,260	2·0	1,730	4·5	4,320	6·9	7,660
6	1·6	1,400	.	950	1·4	1,260	3·0	2,670	4·5	4,320	6·5	6,690
7	1·7	1,480	..	950	1·4	1,260	3·2	2,870	4·5	4,320	5·5	5,570
8	1·7	1,480	..	950	1·4	1,260	3·2	2,870	4·5	4,320	5·0	4,930
9	1·7	1,480	.. ..	950	1·4	1·260	3·2	2,870	4·8	4,690	5·0	4,930
10	1·7	1,480	.	950	1·4	1,260	3·5	3,200	5·0	4,930	5·8	5,970
11	1·7	1,480	.	950	1·4	1,260	3·5	3,200	5·5	5,570	6·4	6,840
12	1·7	1,480	.	950	1·5	1,330	3·5	3,200	5·5	5,570	6·8	7,480
13	1·6	1,400	.	950	1·5	1,330	3·8	3,530	6·0	6,250	7·7	9,250
14	1·6	1,400		950	2·0	1,730	3·8	3,530	7·0	7,850	8·2	10,500
15	1·6	1,400	Frozen	950	2·0	1,730	4·0	3,750	7·0	7,850	9·5	13,900
16	1·6	1,400		950	2·0	1,730	4·0	3,750	6·5	6,900	10·1	15,600
17	1·6	1,400		950	2·4	2,090	3·8	3,530	5·9	6,110	10·4	16,500
18	1·6	1,400		950	2·0	1,730	3·5	3,200	5·7	5,830	9·7	14,500
19	1·6	1,400		950	2·2	1,900	3·5	3,200	5·7	5,830	9·0	12,500
20	1·5	1,330		950	2·6	2,280	3·5	3,200	6·2	5,540	8·3	10,700
21	1·4	1,260	...	950	2·8	2,470	3·6	3,310	7·0	7,850	7·8	9,500
22	1·4	1,260	1·0	980	2·8	2,470	3·5	3,200	7·0	7,850	7·2	8,230
23	1·2	1,110	1·0	980	3·0	2,670	3·2	2,870	7·5	8,820	6·8	7,480
24	1·0	980	1·0	980	3·0	2,670	3·2	2,870	7·7	9,250	6·5	6,990
25	1·0	980	1·0	980	3·0	2,670	3·2	2,870	7·0	7,850	6·8	7,480
26	Frozen	950	1·0	980	2·8	2,470	3·0	2,670	6·7	7,310	7·4	8,620
27	....	950	1·0	980	2·8	2,470	3·0	2,670	6·0	6,250	7·4	8,620
28	.	950	1·0	980	2·8	2,470	3·0	2,670	5·0	4,930	7·8	9,490
29	.	950	...	..	2·0	1,730	3·0	2,670	4·8	4,690	8·0	9,970
30	..	950	..		2·0	1,730	3·2	2,870	4·8	4,690	8·2	10,400
31	...	950	..	..	2·0	1,730		.	5·0	4,930		.....

DAILY GAUGE HEIGHT AND DISCHARGE of Lillooet River 6 miles from Lillooet Lake, for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft.	Feet.	Sec.-ft	Feet	Sec.-ft.	Feet	Sec.-ft
1	9·4	13,600	8·0	10,000	6·8	7,500	4·0	3,750	5·0	4,930	3·5	[illegible]
2	9·9	15,000	8·5	11,200	6·8	7,500	3·8	3,530	5·0	4,930	3·2	[illegible]
3	10·8	17,700	9·2	13,100	7·0	7,850	3·5	3,200	4·6	4,440	3·0	[illegible]
4	10·8	17,700	9·6	14,200	6·8	7,500	3·0	2,670	4·5	4,320	3·0	[illegible]
5	9·8	14,700	9·0	12,500	6·7	7,300	3·2	2,870	4·5	4,320	2·8	[illegible]
6	9·4	13,600	8·9	12,300	6·4	6,840	3·4	2,900	4·0	3,750	2·7	[illegible]
7	8·7	11,700	7·6	9,000	6·0	6,250	3·4	2,900	3·8	3,530	2·7	[illegible]
8	8·7	11,700	6·6	7,200	6·5	7,000	3·8	3,530	3·7	3,420	2·8	[illegible]
9	8·8	12,000	7·4	8,600	6·0	6,250	3·9	3,640	4·7	4,570	2·6	[illegible]
10	9·5	13,900	7·8	9,700	5·8	5,970	4·0	3,750	4·0	3,750	2·3	[illegible]
11	10·0	15,300	8·2	10,400	5·2	5,180	4·0	3,750	4·2	3,970	2·0	[illegible]
12	9·8	14,700	8·6	11,500	5·0	4,930	5·0	4,930	3·8	3,530	2·0	[illegible]
13	10·6	17,100	9·0	12,500	4·4	4,200	8·55	11,300	3·8	3,530	2·0	[illegible]
14	10·5	16,800	9·8	14,700	4·2	3,970	11·3	19,200	3·6	3,310	1·8	[illegible]
15	10·0	15,300	9·2	13,100	4·1	3,860	10·8	17,700	3·3	2,980	1·8	[illegible]
16	9·2	13,100	9·0	12,500	3·5	3,200	11·0	18,300	3·0	2,670	1·8	[illegible]
17	9·5	13,900	8·6	11,500	3·8	3,530	11·2	18,900	3·0	2,670	1·8	[illegible]
18	10·0	15,300	8·0	10,000	4·0	3,750	7·8	9,500	2·8	2,470	1·7	[illegible]
19	10·8	17,700	8·5	11,200	3·8	3,530	6·4	6,840	2·8	2,470	1·7	[illegible]
20	11·0	18,300	9·0	12,500	3·5	3,200	5·8	6,000	2·8	2,470	1·7	[illegible]
21	9·0	12,500	9·0	12,500	3·5	3,200	5·4	5,440	2·8		1·7	[illegible]
22	7·5	8,800	9·0	12,500	3·8	3,530	4·8	4,600	3·0	[illegible]	1·7	[illegible]
23	7·5	8,820	8·4	11,000	3·8	3,530	4·5	4,320	3·0	[illegible]	1·8	[illegible]
24	8·0	10,000	7·8	9,500	4·0	3,750	4·0	3,750	3·2	[illegible]	1·8	[illegible]
25	8·4	10,900	7·8	9,500	4·5	4,320	4·0	3,750	4·4	4,200	1·8	[illegible]
26	8·7	11,700	7·5	8,200	5·0	4,930	4·2	3,970	4·8	4,700	1·8	[illegible]
27	8·0	10,000	7·8	9,500	5·0	4,930	4·3	4,080	4·2	3,970	1·9	[illegible]
28	6·4	6,800	7·6	9,000	4·8	4,700	4·2	3,970	4·2	3,970	1·9	[illegible]
29	6·8	7,500	6·8	7,500	4·5	4,320	5·0	4,930	3·8	3,530	1·8	[illegible]
30	7·2	8,200	6·8	7,500	4·5	4,320	7·6	7,850	3·5	3,200	1·8	[illegible]
31	7·5	8,800	6·8	7·500		...	7·2	8,230	..	.	1·8	[illegible]

RILEY CREEK (1043).

Location.—Above irrigation ditches, about half a mile from the mouth and 9 miles from Lillooet.

Records Available.—Daily discharges from July 28, 1914, to October 11, 1914,(irrigation season).

Drainage Area.—Five square miles (measured from provincial map of 1913, scale 3 miles to 1 inch).

Gauge.—Vertical staff gauge nailed to old flume just below the falls. Readings every second day.

Channel.—Fairly wide and shallow. The bed consists mainly of solid rock and gravel. The current is swift. The metering section is a good one.

Discharge Measurements.—Two discharge measurements in 1914 define the rating curve fairly well for the variations during the irrigation season.

Winter Flow.—Measurements made only during the irrigation season.

Accuracy.—D.

RILEY CREEK (1043).

Riley creek rises in the mountains to the south of Lillooet and discharges into the Fraser river about 9 miles below Lillooet at an elevation of about 620 feet. The drainage area is about 5 square miles.

The climate in the Riley Creek basin is much similar to that of the Lillooet district generally. The summers are quite hot and the winters rather severe. The mean annual precipitation in the valley is about 20 inches.

A large fraction of the water flowing in Riley creek is used to irrigate the benches on the Fraser river near the mouth of the stream. It is very probable the remaining flow could be utilized to advantage on these benches. The possibilities of conserving the high-water flow have never been fully investigated.

DISCHARGE MEASUREMENTS of Riley Cr[illegible] ve intak[illegible] irrigation ditch, for 19[illegible]

Date.	Hydrographer.	Meter No.	W[illegible]	[illegible] of [illegible]	Mean [illegible]	Gauge Height	Discharge.
1914.			[illegible]	[illegible]	[illegible]	[illegible]	Sec.-ft.
July 28	H. C. Hughes	1046	[illegible]	[illegible]	[illegible]	[illegible]	21·4[1]
Sept. 16	do	1046	[illegible]	[illegible]	[illegible]	[illegible]	7·5

[1] Station established.

MON[illegible] DISCHARGE of Riley Creek above [illegible] [illegible], for 1914.

(Drainage area, 5 square m[illegible])

MONTH.	D[illegible] IN SE[illegible]				RUN-OFF.	
	Maximum	Minimum	M[illegible]	Per square mile	Depth in inches on Drainage area.	Total in acre-feet
August	21	4	[illegible]	2·1	2·4	640
September	13	8	[illegible]	2·2	2·5	650

Accuracy "D".

DAILY GAUGE HEIGHT AND DISCHARGE of Riley Creek above irrigation ditches, for 1914.—*Con.*

Day.	July.		August		September.		October	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1·3	13		13		
2				17	1·3	13	1·3	
3			1·35	21		13		
4				17	1·3	13	1·3	
5			1·30	13		13		
6				13	1·3	13	1·3	
7			1·30	13		10		
8				13	1·25	8	1·3	
9			1·30	13		8		
10				13	1·25	8	1·3	
11			1·30	13		8		
12				10	1·25	8	1·3	
13			1·25	8		8		
14				8	1·25	8	1·3	
15			1·25	8		8		
16				8	1·25	8		
17			1·25	8		8		
18					1·25	8		
19			1·25	8		10		
20				8	1·3	13		
21			1·20	4		13		
22				4	1·3	13		
23			1·20	4		13		
24				6	1·3	13		
25			1·25	8		13		
26				8	1·3	13		
27			1·25	8		13		
28	1·3	13		10	1·3	13		
29		13	1·30	13		13		
30	1·3	13	1·30	13	1·3	13		
31		13		13		..		

SETON CREEK (1049).

Location.—At footbridge at provincial hatchery, about half a mile below Seton lake, and three miles from Lillooet.

Records Available.—Daily discharges from April 6 to December 31, 1914.

Drainage Area.—460 square miles (measured from provincial map of 1912, scale 12 miles to 1 inch.)

Gauge.—Vertical staff on bridge pier, referenced to three bench-marks. Daily readings.

Channel.—Wide and shallow, and strewn with boulders. The current is quite swift. The measuring section is hardly an ideal one, though about the best obtainable on the stream.

Discharge Measurements.—Four discharge measurements taken in 1914 define the rating curve fairly well except for extremely low or extremely high stages.

Winter Flow.—Open water conditions all year.

Accuracy.—Daily gauge readings combined with a fairly well-defined rating curve should insure a reasonable degree of accuracy, except possibly at the extreme stages.

SETON CREEK (1049).

Seton Creek has its source in Seton lake at an elevation of 800 feet, and discharges into Cayuse creek at an elevation of 750 feet. The stream itself is only about 1½ miles in length, but the lakes which feed it have a drainage area of some 460 square miles.

Seton creek itself is in the dry belt, though some of the territory it drains is outside. The mean annual precipitation at Lillooet is probably about 15 inches, while it may be as high as 30 or even 40 at the headwaters of some of the tributaries. The general climatic conditions vary in a similar manner.

Seton creek forms part of quite an interesting system of waterways. Anderson river rises near the divide which separates it from the Birkenhead, and flows into Anderson lake, which has a number of other rather important streams tributary to it. Anderson lake discharges through Portage creek into Seton lake, which in its turn is drained by Seton creek. The two lakes at one time formed part of quite an important route into the Lillooet and Cariboo country by Harrison lake and the Lillooet river. The construction of the Yale-Cariboo wagon road caused the practical abandonment of this route years ago, but now the country is being opened up again by the construction of the Pacific Great Eastern railway. The railroad, coming up from Squamish to Pemberton, crosses the divide from the Birkenhead, runs along the shores of Anderson and Seton lakes, follows Seton and Cayuse creeks and then crosses the Fraser river below Lillooet on its way to Clinton and Fort George. During the railroad construction the lakes were used extensively for the transportation of supplies.

The country surrounding Seton and Anderson lakes is very picturesque, and should be a good place for a summer resort. There is plenty of good hunting and fishing in the vicinity in addition to the numerous attractions which the lakes themselves afford.

The Provincial Fisheries Department is operating a fish hatchery on Seton creek. The Salmon coming up from the Fraser river are taken in the creek just below Seton lake. The spawn are hatched and the fry are kept for a time in the tanks at the hatchery. The supply of fresh water required for this purpose is taken from Seton lake.

Owing to the comparatively small fall in Seton creek and the low elevation of Seton lake, there is not much opportunity for using the water for developing water-power or even for irrigation.

There is a considerable quantity of timber on the hills surrounding the two lakes. It is generally fairly easy to get the logs down to the water, and then they can be towed to the saw-mills. There is a saw-mill on each lake.

On account of the proximity of Bridge river to Seton lake, and the great difference in altitude, there is a splendid chance to develop a large amount of water-power. By driving a tunnel through the intervening ridge, water could be diverted from Bridge river and conveyed to a point on the hillside above Seton lake, whence penstocks could be laid to a power-house situated beside the lake. Such an installation could make use of the whole minimum flow of Bridge river at a head of about 2,000 feet. If storage could be obtained on Bridge river, the available flow at low water could be increased. Such a development might mean the addition of more than 500 cubic feet per second to the natural flow of Seton creek and it would be necessary to enlarge its channel in order that it might carry off this greatly increased discharge without damage to the surrounding property. The tunnel portal and the penstocks for such a plant would be located on the hillside above the Pacific Great Eastern railway, and it would be necessary to take extra precautions to prevent leaks or breaks which might wash out the track.

There are three creeks of some importance flowing into Anderson lake, and brief descriptions of them are added here. As yet no measurements have been taken on them by the engineers of this survey, partly on account of the poor transportation facilities. Next season, however, measurements will probably be made on some or all of them.

ANDERSON RIVER.

Anderson river rises in Summit lake at an elevation of 1,600 feet and discharges into the southern end of Anderson lake at an elevation of 850 feet. Cedar, Spruce and Little Blackwater creeks are tributaries of Anderson river.

The climatic conditions in the Anderson Creek valley differ considerably from those around Lillooet. The summers are milder and the winters are not quite as cold. The mean annual precipitation is considerably greater, being between 30 and 40 inches. Irrigation is practised to some extent, but is not so necessary, as in the country immediately surrounding Lillooet.

The soil in the Anderson river valley is very fertile, and much of the best land has been taken up for settlement. This development will probably be increased on account of greatly improved transportation facilities afforded by the railroad. There is a good growth of timber in many parts of the valley. The surrounding hills are rich in minerals, and many claims have been staked, though comparatively little development has been done as yet.

LITTLE BLACKWATER.

Little Blackwater creek, which is a tributary of Anderson river, rises in Little Blackwater lake. About 3 miles of swampy land separate this lake from Big Blackwater lake, which is said to be at a somewhat higher elevation. Little Blackwater creek is quite small itself, but by diverting water into it from Big Blackwater lake, it is possible that a considerable amount of water-power might be developed by a pipeline down the valley of Little Blackwater creek.

MCGILLIVRAY CREEK.

McGillivray creek rises in the hills northwest of Anderson lake, into which it discharges.

Near the mouth of the creek there is a falls about 60 feet high at which a considerable amount of water-power might be developed. A small fraction of the water is being used at present to run a saw-mill which is situated at the mouth. Water is led from the head of the falls through a 6-inch wooden stave pipe to the turbines which drive the mill.

There are gravel deposits on this stream which contain small quantities of gold, and they are being worked to a certain extent.

ROARING CREEK.

This stream empties into Anderson lake about 7 miles from its southern end. It has quite a high water fall on it at which water-power could probably be developed.

DISCHARGE MEASUREMENTS of Seton Creek near Seton Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 6	H. J. E. Keys	1046	66	112	3·23	1·72	362[1]
June 13	Keys & Hughes	1046	78	231	6·73	3·30	1,556
" 19	H. C. Hughes	1046	78	261	7·50	3·70	1,967
Sept. 17	do	1046	73	134	3·64	2·20	488

[1] Station established.

MONTHLY DISCHARGE of Seton Creek below Seton Lake, for 1914.

(Drainage area, 460 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	450	300	362	0·8	0·9	21,500
May	1,760	420	1,013	2·2	2·5	62,300
June	2,280	1,660	1,84	4·0	4·5	110,000
July	2,800	1,760	2,390	5·2	6·0	147,000
August	1,760	700	952	2·1	2·4	58,500
September	610	450	492	1·1	1·2	29,300
October	610	450	510	1·1	1·3	31,400
November	610	450	509	1·1	1·2	30,300
December	450	340	382	0·8	0·9	23,500

Accuracy "C".

DAILY GAUGE HEIGHT AND DISCHARGE of Seton Creek below Seton Lake, for 1914.

DAY.	April.		May.		June.		July.		August.		September.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	.. ..	.. ..	2·0	420	3·4	1,660	3·7	1,970	3·5	1,760	2·4	610
2	..	.. .	2·0	420	3·4	1,660	3·7	1,970	3·4	1,660	2·4	610
3			2·0	420	3·4	1,660	3·7	1,970	3·3	1,550	2·4	610
4			2·0	420	3·4	1,660	4·0	2,280	3·2	1,440	2·4	610
5	1·4	320	2·0	420	3·4	1,660	4·2	2,490	2·8	1,030	2·3	540
6	1·3	310	2·1	450	3·4	1,660	4·2	2,490	2·8	1,030	2·3	540
7	1·5	330	2·1	450	3·4	1,660	4·1	2,390	2·8	1,030	2·2	490
8	1·5	330	2·1	450	3·4	1,660	4·2	2,490	2·8	1,030	2·3	540
9	1·5	330	2·2	490	3·4	1,660	4·2	2,490	2·6	810	2·3	540
10	1·6	340	2·2	490	3·4	1,660	4·3	2,600	2·7	920	2·2	490
11	1·6	340	2·3	540	3·4	1,660	4·3	2,600	2·7	[illegible]	2·2	490
12	1·6	340	2·4	610	3·4	1,660	4·2	2,490	2·7	920	2·2	490
13	1·7	350	2·5	700	3·4	1,660	4·3	2,600	2·7	920	2·1	450
14	1·7	350	2·6	810	3·4	1,660	4·2	2,490	2·7	920	2·1	450
15	1·7	350	2·7	920	3·5	1,760	4·2	2,490	2·7	920	2·1	450
16	1·7	350	2·8	1,030	3·5	1,760	4·3	2,600	7	920	2·0	420
17	1·7	350	2·8	1,030	3·7	1,970	4·4	2,700	[illegible]	920	2·0	420
18	1·7	350	2·9	1,140	3·8	2,070	4·4	2,700	2·7	920	2·2	490
19	1·7	350	2·9	1,140	3·7	1,970	4·5	2,800	2·6	810	2·2	[illegible]
20	1·8	370	3·0	1,250	3·8	2,070	4·5	2,800	2·6	810	2·2	490
21	1·8	370	3·1	1,340	3·9	2,180	4·5	2,800	2·6		2·2	[illegible]
22	2·1	50	3·2	1,440	4·0	2,280	4·4	2,700	2·6		2·1	450
23	2·1	450	3·3	1,550	3·9	2,180	4·3	2,600	2·6	810	2·1	[illegible]
24	2·0	420	3·4	1,660	3·9	2,180	4·2	2,490	2·6	810	2·1	450
25	2·0	420	3·4	1,660	3·8	2,070	4·1	2,390	2·6	810	2·1	[illegible]
26	2·0	420	3·4	1,660	3·8	2,070	4·1	2,390	2·5	700	2·1	[illegible]
27	2·0	420	3·4	1,660	3·7	1,970	3·8	2,070	2·5	700	2·1	[illegible]
28	2·0	420	3·5	1,760	3·6	1,860	3·7	1,970	2·5	700	2·1	[illegible]
29	2·0	420	3·5	1,760	3·6	1,860	3·6	1,860	2·5	700	2·1	[illegible]
30	2·0	420	3·4	1,660	3·7	1,970	3·6	1,860	2·5	700	2·1	[illegible]
31			3·4	1,660			3·5	1,760	2·5	700		

DAILY GAUGE HEIGHT AND DISCHARGE of Seton Creek below Seton Lake, for 1914—*Con.*

Day.	October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·2	490	2·2	490	2·1	450
2	2·2	490	2·3	540	2·1	450
3	2·2	490	2·4	610	2·1	450
4	2·2	490	2·4	610	2·0	420
5	2·2	490	2·4	610	2·0	420
6	2·2	490	2·4	610	2·0	420
7	2·2	490	2·4	610	2·0	420
8	2·2	490	2·4	610	2·0	420
9	2·2	490	2·4	610	2·0	420
10	2·2	490	2·3	540	2·0	420
11	2·2	490	2·3	540	1·9	390
12	2·2	490	2·3	540	1·9	390
13	2·2	490	2·3	540	1·9	390
14	2·1	450	2·3	540	1·9	390
15	2·1	450	2·2	490	1·8	370
16	2·1	450	2·2	490	1·8	370
17	2·2	490	2·1	450	1·8	370
18	2·2	490	2·1	450	1·8	370
19	2·2	490	2·1	450	1·8	370
20	2·3	540	2·1	450	1·7	350
21	2·3	540	2·1	450	1·7	350
22	2·3	540	2·1	450	1·7	350
23	2·4	610	2·1	450	1·7	350
24	2·4	610	2·1	450	1·7	350
25	2·4	610	2·1	450	1·7	350
26	2·4	610	2·1	450	1·7	350
27	2·3	540	2·1	450	1·6	340
28	2·3	540	2·1	450	1·6	340
29	2·2	490	2·1	450	1·6	340
30	2·2	490	2·1	450	1·6	340
31	2·2	490			1·6	340

SIX-MILE CREEK (1061).

Location.—At Highway bridge—1 mile from the mouth, 5 miles from Pemberton, and 56 miles from Squamish.

Records Available.—Daily discharges from June 2, 1914, to December 31, 1914.

Drainage Area.—Thirty square miles (measured from the provincial map of 1913, scale 3 miles to 1 inch).

Gauge.—Vertical staff on bridge pier, referenced to three bench-marks. Daily readings.

Channel.—Wide and shallow and strewn with boulders and coarse gravel. The current is very swift. The measuring section is hardly an ideal one, though but the best obtainable on the stream.

Discharge Measurements.—Five discharge measurements in 1914–15 define rating curve fairly well, except for extremely high stages.

Winter Flow.—Open water conditions all winter.

Accuracy.—Daily gauge readings combined with a fairly well-defined rating rve should insure a reasonable degree of accuracy, except possibly at extremely h stages.

SIX-MILE CREEK (1061).

Six-mile creek has its source in the mountains to the southwest of Pemberton and discharges into the Green river at an elevation of about 1,400 feet. It has a drainage area of something like 30 square miles.

The climate in the Six-mile creek watershed is much similar to that of Pemberton meadows and the Green river valley. The range of temperature is not very great. There is a fairly heavy snowfall. The mean annual precipitation of the watershed is about 75 inches.

Six-mile creek is the second largest tributary of Green river. The stream has a very rapid fall, and considerable power might be developed on it. If a suitable strap site can be found on it, it would assist in regulating the flow in Green river for use at the proposed development at Nairn falls. Its value in this capacity has never been fully investigated.

The main line of the Pacific Great Eastern railway crosses the stream about three-quarters of a mile from the mouth. A flag-station, Tisdall, near this point, affords easy access to the gauging station.

There is some good farming land on the benches near the mouth of the stream, but it is little developed as yet.

DISCHARGE MEASUREMENTS of Six-mile Creek at mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1914			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 21[1]	Keys & Hughes	1046					
Aug 12	H. C. Hughes	1046	48	123	6·8	3·32	840
Sept. 9	do	1046	45	66	4·43	2·28	290
" 10	do	1046	45	86·4	5·13	2·80	446
Nov. 27	Dobbie & Hughes	1057	45	67·8	5·18	2·40	346[2]

[1] Stations established. [2] Channel probably changed by freshet.

MONTHLY DISCHARGE of Six-mile Creek, 5 miles from Pemberton, for 1914.

(Drainage area, 30 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.	
June	1,720	390	866	28·9	32·2	52,000	C
July	1,900	540	1,170	39·0	45·0	71,900	C
August	1,090	390	717	23·9	27·6	44,100	B
September	...	...					
October	6,580	40	1,620	5·4	6·2	99,600	D
November	1,850	100	590	2·0	2·2	35,000	B

DAILY GAUGE HEIGHT AND DISCHARGE of Six-mile Creek at Highway Bridge, for 1914.

DAY.	June.		July.		August.		September.		October.		November.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.
1	3·4	910	3·9	1,360	3·0	600	2·65	410	2·6	390	4·45	1,850
2	3·4	910	4·2	1,630	3·2	750	2·6	390	2·4	320	4·25	1,680
3	3·4	910	4·4	1,810	3·3	830	2·6	390	2·2	260	4·15	1,580
4	3·0	600	4·3	1,720	3·4	910	2·6	390	2·1	230	3·95	1,400
5	2·9	540	4·0	1,450	3·3	830	2·6	390	2·1	230	3·65	1,130
6	2·7	440	3·8	1,270	3·3	830	2·6	390	1·9	180	3·35	870
7	2·7	440	3·7	1,180	3·2	750	2·6	390	1·6	120	3·05	640
8	2·6	390	3·5	1,000	3·2	750	2·6	390	1·1	40	3·25	790
9	2·7	440	3·5	1,000	3·6	600	2·5	350	2·2	260	3·45	950
10	2·8	490	3·4	910	3·0	600	2·3	290	2·7	440	3·15	710
11	2·9	540	4·2	1,630	3·1	670	2·8	490	2·2	260	2·95	570
12	3·1	670	4·5	1,900	3·2	750	2·8	490	2·1	230	2·75	460
13	3·3	830	4·3	1,720	3·6	1,090	2·3	290	6·3	3,520	2·65	420
14	3·8	1,270	4·4	1,810	3·4	910	2·3	290	6·0	3,250	2·45	330
15	3·9	1,360	4·5	1,900	3·2	750	2·1	230	8·9	5,860	2·35	300
16	4·2	1,630	4·3	1,720	3·2	750	2·0	200	9·7	6,580	2·35	300
17	4·3	1,720	3·7	1,180	3·0	600		.	..	6,000	2·15	240
18	4·0	1,450	3·8	1,270	2·9	540	...	..		4,000	1·95	190
19	3·8	1,270	3·8	1,270	3·3	830	...		4·55	1,950	2·05	220
20	3·4	910	3·5	1,000	3·5	1,000			4·15	1,580	2·15	240
21	3·1	670	3·2	750	3·1	670			3·75	1,220	2·25	280
22	3·0	600	3·1	670	3·5	1,000	..		3·45	960	2·15	240
23	3·1	670	3·3	830	2·9	540			3·25	790	2·35	300
24	3·0	600	3·3	830	2·9	540		...	2·95	570	2·35	300
25	3·4	910	3·3	830	3·1	670			3·15	710	3·25	790
26	3·4	910	3·3	830	3·0	600			3·15	710	2·65	420
27	3·3	830	3·1	670	3·0	600			3·55	1,040	1·70	140
28	3·4	910	3·0	600	3·1	670			4·45	1,850	1·80	160
29	3·5	1,000	2·9	540	3·0	600			5·55	2,850	1·60	120
30	3·7	1,180	3·0	600	3·0	600			4·85	2,220	1·50	100
31			3·0	600	2·6	390			4·25	1,680		

DAILY GAUGE HEIGHT AND DISCHARGE of Six-mile Creek at Highway Bridge, for 1914—*Con.*

Day.	December.	
	Gauge Height	Discharge
	Feet.	Sec.-ft.
1	2·05	220
2	2·00	200
3	1·95	[illegible]
4		
5		
6		
7		
8		
9		
10		
11		
12		
13	1·45	[illegible]
14	1·30	[illegible]
15	1·50	[illegible]
16	1·35	[illegible]
17		
18	1·20	[illegible]
19	1·25	[illegible]
20		
21		
22	1·25	[illegible]
23		
24		
25	1·30	[illegible]
26	1·20	[illegible]
27	1·30	[illegible]
28		
29	1·40	[illegible]
30	1·40	[illegible]
31	1·40	[illegible]

SOO RIVER (1037).

Location.—At Highway bridge, 2 miles from the mouth; 6½ miles from Pemberton, and 56 miles from Squamish.

Records Available.—Six meter measurements. Gauge readings are available from December 5, 1914. These can be used to get discharges when the curve is more thoroughly defined.

Drainage Area.—Seventy-five square miles (measured from the Provincial map of 1912, scale 3 miles to 1 inch).

Gauge.—Vertical staff on bridge pier, referenced to three bench-marks. Readings daily.

Channel.—Wide and shallow, strewn with boulders, gravel and silt. The current is fairly swift. The metering section is an excellent one.

Discharge Measurements.—Six meter measurements.

Winter Flow.—The measuring section is usually frozen over and the channel is affected by ice at times during the winter.

SOO RIVER (1037).

Soo river has its source in the mountains to the northwest of Green lake and discharges into the Green river about 11 miles from its mouth, at an elevation of some 1,500 feet. It has a drainage area of something like 75 square miles.

The climate in the Soo river watershed is much similar to that of Pemberton meadows and the Green river valley. The range of temperature is not very great, and there is a fairly heavy snowfall. The mean annual precipitation for the whole watershed is about 75 inches.

The discharge figures indicate that there is a considerable quantity of water flowing in Soo river. This could be used to develop power in a small canyon about 2 miles from the mouth, in which there is a large fall. The stream could also be used to good advantage as a storage reservoir for power development on Green river at Nairn falls. About 20 miles from the mouth there is a string of fair-sized lakes and several large meadows which are well adapted for this purpose. A pack trail follows the stream up to the lakes.

The main line of the Pacific Great Eastern railway follows along the right bank for about 2 miles, and crosses 4 miles from the mouth.

There is some good farming land on the flats near the mouth of the stream.

The Soo river is fairly well-timbered.

DISCHARGE MEASUREMENTS of Soo River near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
March 24[1]	H. J. E. Keys				....		
May 30	Keys & Hughes	1046	107	320	2·67	2·93	853
July 19	H. C. Hughes	1046	115	426	4·42	3·87	1,880
Aug. 13	do	1046	110	366	3·60	3·50	1,320
Dec. 3	Dobbie & Hughes	1057	90	223	1·61	1·10	357[2]

[1] Station established. [2] Channel probably changed by freshet

TEXAS CREEK (1044).

Location.—At the highway bridge, 14 miles from Lillooet, and on the west side of the Fraser river.

Records Available.—Daily discharges from April 14 to September 14, 1914 irrigation season).

Drainage Area.—Fifty square miles (measured from the provincial map of 1912, scale 12 miles to 1 inch).

Gauge.—Vertical staff gauge nailed to bridge pier, and referenced to three bench-marks. Gauge readings taken three times a week.

Channel.—Wide and shallow, covered with boulders. The measuring section on the lower side of the bridge is rather poor but is the best obtainable.

Discharge Measurements.—Four meter measurements taken during the spring and summer of 1914 define the rating curve fairly well for all but the highest stages.

Winter Flow.—Measurements made only during the irrigation season.

Accuracy.—The four meter measurements agree fairly well and cover all ut the highest stages. The gauge readings were taken only three times a week.

TEXAS CREEK (1044).

Texas creek has its source in the mountains to the south of Lillooet. Some f the mountain peaks in its vicinity attain an altitutde of 8,000 feet. It disharges into the Fraser river some 14 miles below Lillooet, at an elevation of out 600 feet. It has a drainage area of something like 50 square miles.

The climate in the Texas creek watershed is much similar to that of the Lillooet district generally; the summers are quite hot and the winters rather severe. At the mouth the mean annual precipitation is probably about 20 inches, and this may increase to 30 inches or more at the higher altitudes near the head-waters.

The discharge figures indicate that there is a considerable quantity of water flowing in Texas creek during the irrigation season, and in a dry part of the country like the Lillooet district, this water should be quite valuable. Unfortunately, the benches near the mouth are so high above the stream that it would be very costly to get the water up to them. There are large areas of good land on the opposite side of the Fraser river which might be irrigated from Texas creek, though the expense of conveying the water across the river would be quite high.

DISCHARGE MEASUREMENTS of Texas Creek one mile from mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1914.			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft
April 14	H. J. E. Keys	1046	19	29·7	3·60	1·20	107[1]
June 7	Keys & Hughes....	1046	22	42·7	5·47	2·00	233
July 29	H. C. Hughes........	1046	22	43·0	2·96	1·50	137
Sept. 16	do	1046	20	26·3	2·39	1·00	63

[1] Station established, gauge referenced to bench-marks

MONTHLY DISCHARGE of Texas Creek one mile from mouth, for 1914.

(Drainage area, 50 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
May	340	120	247	4·9	5·6	15,2
June	560	210	337	6·7	7·5	20,0
July	280	140	211	4·2	4·8	13,0
August	130	70	100	2·0	2·3	6,1
September	100	50	71	1·4	1·6	4,2

Accuracy "C".

DAILY GAUGE HEIGHT AND DISCHARGE of Texas Creek one mile from mouth, for 1914.

DAY.	April.		May.		June.		July.		August.		September	
	Gauge Height.*	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1·4	120	2·6	360	2·1	250		130	1·05	70
2			1·4	120		390		250	1·45	130		70
3			1·7	170	2·8	410	2·1	250		130	1·05	70
4			1·6	160		390		240	1·45	130		70
5			1·5	140	2·6	360	2·0	230		120	1·0	60
6			1·5	140		320		230	1·4	120		60
7			1·5	140	2·2	280	2·0	230		120	1·0	60
8			1·5	140		250		240	1·4	120		60
9			1·7	170	2·0	230	2·1	250		120	0·9	50
10			1·8	190		240		260	1·35	110		50
11				220	2·1	250	2·2	280		110	0·9	50
12			2·1	250		280		260	1·3	100		60
13				260	2·3	300	2·1	250		100	1·0	60
14			2·2	280		360		240	1·3	100		70
15	1·3	100		280	2·9	440	2·0	230		100	1·05	70
16	1·3	100	2·2	280		480		220	1·25	100		70
17	1·4	120		290	3·2	510	1·9	210		100	1·0	60
18	1·4	120	2·3	300		540		220	1·25	100		60
19	1·4	120		300	3·4	560	2·0	230		90	1·0	60
20	1·4	120	2·3	300		390		220	1·2	90		70
21	1·3	100		310	1·9	210	1·9	210		90	1·05	70
22	1·3	100	2·4	320		240		190	1·2	90		80
23	1·3	100		330	2·2	280	1·7	170		90	1·1	70
24	1·5	140	2·5	340		280		160	1·15	80		80
25	1·5	140		320	2·2	280	1·6	150		80	1·2	90
26	1·4	120	2·3	300		290		150	1·15	80		90
27	1·4	120		290	2·3	300	1·55	150		80	1·25	100
28	1·4	120	2·2	280		300		140	1·1	70		100
29	1·4	120		290	2·3	300	1·5	140		70	1·3	100
30	1·4	120	2·3	300		280		140	1·05	70		100
31				330			1·5	140		70		

DAILY GAUGE HEIGHT AND DISCHARGE of Texas Creek, one mile from mouth, for 1914—*Con.*

Day.	October	
	Gauge Height	Di charge
	Feet.	Sec ft
1		
2	1·3	
3		
4	1·25	
5		
6	1·2	
7		
8	1·15	
9		
10	1·1	
11		
12	1·05	
13		
14	1·0	
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

MISCELLANEOUS METERING STATIONS.

Date.	Stream.	Tributary to—	Locality.	Gauge Height
		SOUTHERN DISTRICT.		Feet.
Aug. 26	Black	Howe sound	Above intake	0·49
May 22	Trout—east	Trout lake	Hastings townsite.	
	Trout—west	"	"	
July 14	Skagit	Gulf of Georgia	International boundary	2·68
Aug. 12	Windermere	Burrard inlet	Bidwell bay	0·31
" 14	"	"	"	0·31
Sept. 24	Capilano intake from Capilano creek			
	Overflow from intake			
	Amount entering city pipes			
		VANCOUVER ISLAND.		
June 11	Sooke	Sooke inlet	Two miles from mouth	
July 31	Ash	Mouth		2·00
Sept. 11	"	"		1·68
Dec 14	"	"		2·30

REPORT

OF THE

BRITISH COLUMBIA HYDROGRAPHIC SURVEY FOR 1914

CHAPTER 6

Kamloops Division—Hydrographic Data

CHAPTER VI.

KAMLOOPS DIVISION—HYDROGRAPHIC DATA.

REGULAR METERING STATION.

Bolean Creek (2002).

Location.—Section 10, township 18, range 12, west 6th meridian.

Records Available.—May 23 to December 31, 1911; January 1 to September 16, 1912; April 27 to September 19, 1913; April 1 to December 8, 1914.

Drainage Area.—Eighty square miles.

Gauge.—Vertical staff gauge. Read by Clement Stickney, Falkland, B.C.

Channel.—Gravel, sandy and clean. One permanent channel. Average width about 20 feet.

Discharge Measurements.—In freshet, measurements are made with a stay line and 6½ pound weight from a log. Low-water measurements are made by wading. Gauge-height discharge curve is fairly well defined from twelve meterings.

Winter Flow.—Partial ice conditions usually prevail during December and January.

Accuracy.—Fairly high, being probably within 10 per cent of obtaining conditions.

Discharge Measurements of Bolean Creek near Falkland, for 1914.

Date	Hydrographer	Meter No.	Width	Area of Section	Mean Velocity.	Gauge Height	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
22	C. Corbould	1915	26·0	26·0	2·4	1·8	63·0
23	"	1915	20·0	15·1	1·38	1·3	20·8
24	"	1915	16·5	6·8	1·13	1·15	7·7

See meterings 1911 and 1912, Water Resources Paper No. 1.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Bolean Creek near Stickney's Ranch, for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·25	15·6	2·24	148·4	2·42	[illegible]
2	1·30	18·2	2·47	230·3	2·40	[illegible]
3	1·30	18·2	2·67	311·4	2·42	[illegible]
4	1·40	24·0	2·57	270·0	2·32	[illegible]
5	1·42	25·3	2·50	242·0	2·25	[illegible]
6	1·47	28·5	2·30	167·0	2·20	[illegible]
7	1·57	[illegible]	2·30	167·0	2·15	[illegible]
8	1·55	34·2	2·35	185·0	2·15	[illegible]
9	1·57	35·7	2·75	345·0	2·10	[illegible]
10	1·60	38·0	2·85	387·0	2·20	[illegible]
11	1·60	38·0	2·80	366·0	2·30	[illegible]
12	1·65	42·5	2·90	408·0	2·25	[illegible]
13	1·75	52·0	2·87	395·4	2·22	[illegible]
14	1·90	71·0	3·05	470·0	2·17	[illegible]
15	1·97	82·9	3·02	457·4	2·10	[illegible]
16	2·00	88·0	2·95	428·5	2·16	[illegible]
17	1·92	74·1	2·80	366·0	2·05	[illegible]
18	1·87	66·8	2·72	332·4	2·00	[illegible]
19	1·85	64·0	2·66	307·2	1·90	[illegible]
20	2·00	88·0	2·60	282·0	1·85	[illegible]
21	1·95	79·5	2·60	282·0	1·80	[illegible]
22	1·90	71·0	2·60	282·0	1·80	[illegible]
23	1·85	64·0	2·67	311·4	1·82	[illegible]
24	1·90	71·0	2·70	324·0	1·82	[illegible]
25	1·90	71·0	2·57	270·0	1·90	[illegible]
26	1·90	71·0	2·52	250·0	1·82	[illegible]
27	1·95	79·5	2·42	210·8	1·72	[illegible]
28	2·00	88·0	2·37	192·2	1·70	[illegible]
29	2·00	88·0	2·30	167·0	1·70	[illegible]
30	2·05	98·5	2·27	157·7	1·65	[illegible]
31	..	..	2·3	167·0		

DAILY GAUGE HEIGHT AND DISCHARGE of Bolean Creek near Stickney's Ranch for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·60	38·0	1·15	10·5	1·00	3·0	1·30	18·2	1·32	19·4	1·25	15·6
2	1·52	32·0	1·15	10·5	·97	2·1	1·25	15·6	1·40	24·0	1·25	15·6
3	1·47	28·5	1·10	8·0	1·00	3·0	1·25	15·6	1·35	21·1	1·30	18·2
4	1·42	25·3	1·10	8·0	·97	2·1	1·25	15·6	1·30	18·2	1·25	15·6
5	1·40	24·0	1·10	8·0	1·00	3·0	1·22	14·4	1·32	19·4	1·20	13·0
6	1·40	24·0	1·10	8·0	·97	2·1	1·20	13·0	1·35	21·1	1·20	13·0
7	1·35	21·1	1·10	8·0	·97	2·1	1·20	13·0	1·35	21·1	1·27	16·6
8	1·30	18·2	1·10	8·0	1·00	3·0	1·20	13·0	1·30	18·2	1·35	21·1
9	1·30	18·2	1·10	8·0	1·00	3·0	1·20	13·0	1·30	18·2		
10	1·30	18·2	1·10	8·0	1·00	3·0	1·20	13·0	1·30	18·2		
11	1·30	18·2	1·10	8·0	1·00	3·0	1·20	13·0	1·30	18·2		
12	1·32	19·4	1·10	8·0	1·07	6·5	1·27	16·6	1·30	18·2		
13	1·52	32·0	1·05	5·5	1·10	8·0	1·40	24·0	1·30	18·2		
14	1·77	54·0	1·05	5·5	1·15	10·5	1·32	19·4	1·25	15·6		
15	1·65	42·5	1·02	4·0	1·20	13·0	1·30	18·2	1·25	15·6		
16	1·47	28·5	1·00	3·0	1·15	10·5	1·30	18·2	1·30	18·2		
17	1·40	24·0	1·00	3·0	1·20	13·0	1·30	18·2	1·25	15·6		
18	1·37	22·3	1·00	3·0	1·25	15·6	1·30	18·2	1·25	15·6		
19	1·35	21·1	1·00	3·0	1·25	15·6	1·30	18·2	1·30	18·2		
20	1·35	21·1	1·00	3·0	1·22	14·4	1·30	18·2	1·30	18·2		
21	1·40	24·0	1·00	3·0	1·20	13·0	1·30	18·2	1·30	18·2		
22	1·30	18·2	1·00	3·0	1·20	13·0	1·30	18·2	1·27	16·6		
23	1·30	18·2	1·00	3·0	1·20	13·0	1·30	18·2	1·25	15·6		
24	1·30	18·2	1·00	3·0	1·15	10·5	1·24	15·0	1·27	16·6		
25	1·30	18·2	1·00	3·0	1·15	10·5	1·25	15·6	1·30	18·2		
26	1·25	15·6	1·00	3·0	1·20	13·0	1·25	15·6	1·30	18·2		
27	1·25	15·6	1·00	3·0	1·70	47·0	1·25	15·6	1·30	18·2		
28	1·20	13·0	1·00	3·0	1·45	27·2	1·25	15·6	1·30	18·2		
29	1·20	13·0	1·00	3·0	1·35	21·1	1·20	13·0	1·30	18·2		
30	1·20	13·0	1·00	3·0	1·30	18·2	1·20	13·0	1·25	15·6		
31	1·20	13·0	1·00	3·0			1·20	13·0				

MONTHLY DISCHARGE of Bolean Creek near Stickney's Ranch, for 1914.

(Drainage area, 80 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.
April	98·5	15·6	57·4	0·7	0·8	3,415
May	470·0	148·4	286·4	3·6	4·1	17,610
June	210·8	42·5	108·5	1·3	1·4	6,456
July	54·0	13·0	22·9	0·3	0·3	1,408
August	10·5	3·0	5·3	0·6	0·06	326
September	47·0	2·1	10·8	0·13	0·14	643
October	24·0	13·0	16·0	0·2	0·2	984
November	24·0	15·6	18·1	0·23	0·26	1,077
December						
The period	470·0	2·1	65·7	0·81	7·26	31,919

Note.—Winter conditions obtained after December 8.

CAMPBELL CREEK (2004).

Location.—Section 26, township 19, range 16, west 6th meridian.

Records Available.—May 27 to October 4, 1911; April 1 to September 16, 1912; May 1 to August 31, 1913; April 1 to August 31, 1914.

Drainage Area.—Two hundred square miles.

Gauge.—Vertical staff gauge read by A. Holt of Barnhart Vale.

Channel.—Straight for about 100 feet at measuring section. Bed of stream sandy and fairly permanent. Average width of channel about 10 feet.

Discharge Measurements.—Gauge height discharge curve is very well defined from seven meterings taken during 1914. Measurements in high water taken from bridge with 6-pound weight. In low water, measurements taken by wading. Flow in this stream ceased altogether on August 23.

Winter Flow.—Ice conditions prevail during December, January, and February.

Accuracy.—High; results compiled from a well-rated curve.

DISCHARGE MEASUREMENTS of Campbell Creek at Todd's Corners, for 1914.

Date	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft
April 17	E. M. Dann	1505	9	6·7	0·83	[illegible]	[illegible]
May 5	E. M. Dann & E. H. Tredcroft	1055	9	17·0	1·75	1·6	[illegible]
May 15	do do	1055	20	33·9	2·13	2·6	[illegible]
June 20	C. B. Corbould	1915	9	10·0	1·1	1·05	[illegible]
June 25	do	1915	7	8·4	1·7	1·5	[illegible]
July 16	do	1915	11	12·1	1·56	1·25	[illegible]
July 21	do	1915	11	10·7	1·29	1·15	[illegible]
Sept 26	do	1915	5	1·1	0·7	0·55	[illegible]

Meterings not all made at same sections

[1] Dam at Campbell Lake closed

[2] The only ranchers diverting water above station on this date were Messrs Pratt & Blackwell. The former u about 0·7 sec.-ft. and the latter about 1·2 sec.-ft

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Campbell Creek at Todd's Corners, for 1914.

Day.	April.		May.		June	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·20	15·5	1·12	13·1	1·75	35·5
2	1·20	15·5	1·17	14·6	1·67	32·4
3	1·20	15·5	1·25	17·2	1·62	30·5
4	1·20	15·5	1·31	19·2	1·51	26·4
5	1·21	15·8	1·52	26·8	1·45	24·2
6	1·15	14·0	1·83	38·7	1·45	24·2
7	1·11	12·8	1·87	40·3	1·45	24·2
8	1·10	12·5	1·92	42·3	1·42	23·1
9	1·01	10·1	1·97	44·4	1·40	22·4
10	1·01	10·1	2·00	45·7	1·40	22·4
11	1·01	10·1	2·10	50·0	1·35	20·6
12	1·00	9·8	2·25	56·6	1·30	18·9
13	0·99	9·3	2·45	65·5	1·30	18·9
14	0·98	8·7	2·60	72·2	1·27	17·9
15	0·95	8·4	2·60	72·2	1·20	15·5
16	0·91	7·5	2·60	72·2	1·20	15·5
17	0·90	7·3	2·60	72·2	1·25	17·2
18	0·86	6·4	2·55	70·0	1·25	17·2
19	0·85	6·2	2·50	67·7	1·15	14·0
20	0·95	8·4	2·40	63·3	1·06	11·4
21	1·00	9·8	2·32	59·7	1·03	10·6
22	1·00	9·8	2·28	57·9	1·05	11·1
23	0·95	8·4	2·22	55·3	1·02	10·3
24	0·90	7·3	2·18	53·6	1·02	10·3
25	1·00	9·8	2·02	46·5	1·00	9·8
26	1·05	11·1	2·00	45·7	0·97	8·9
27	1·05	11·1	1·95	43·6	0·95	8·4
28	1·05	11·1	1·91	41·9	0·97	8·9
29	1·05	11·1	1·90	41·5	0·92	7·8
30	1·10	12·5	1·86	39·9	0·92	7·8
31			1·81	37·9		

DAILY GAUGE HEIGHT AND DISCHARGE of Campbell Creek near Todd's Corners, for 1914—*Con.*

DAY.	July.		August	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·90	7·3	0·70	3·2
2	0·90	7·3	0·70	3·2
3	0·90	7·3	0·66	2·6
4	0·82	5·5	0·72	3·[illegible]
5	0·87	6·6	0·72	3·6
6	0·87	6·6	0·70	3·2
7	0·85	6·2	0·70	3·2
8	0·77	4·5	0·66	2·[illegible]
9	0·67	2·7	0·65	2·4
10	0·77	4·5	0·65	2·4
11	0·82	5·5	0·65	2·4
12	0·90	7·3	0·65	2·4
13	0·95	8·4	0·65	2·4
14	1·00	9·8	0·65	2·4
15	1·30	18·9	0·65	2·4
16	1·25	17·2	0·65	2·4
17	1·20	15·5	0·62	1·[illegible]
18	1·15	14·0	0·60	1·6
19	1·12	13·1	0·60	1·6
20	1·02	10·3	0·60	1·6
21	1·02	10·3	0·60	1·6
22	1·02	10·3	0·60	1·6
23	1·02	10·3		
24	0·87	6·6		
25	0·75	4·2		
26	0·75	4·2		
27	0·75	4·2		
28	0·80	5·1		
29	0·80	5·1		
30	0·71	3·4		
31	0·70	3·2		

MONTHLY DISCHARGE of Campbell Creek near Todd's Corners, for 1914.

(Drainage area, 200 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	15·8	6·2	10·7	0·05	0·06	6
May	72·2	13·1	48·0	0·24	0·28	2,9
June	35·5	7·8	17·5	0·09	0·10	1,0
July	18·9	2·7	8·0	0·04	0·05	4
August	3·6	0·0	1·7	0·01	0·01	1
The period	72·2	0·0	17·2	0·09	0·50	5,2

NOTE.—No water coming down the creek at the station after August 22.

Precipitation is low (probably 12 inches per annum), and evaporation from lake surfaces near headwaters large

CANYON CREEK (2057).

Location.—Section 32, township 21, range 15, west 6th meridian.

Records Available.—June 7 to August 28, 1914.

Drainage Area.—Seven square miles.

Gauge.—Standard staff gauge read daily by D. A. McKenzie.

Channel.—Channel straight at measuring section, banks very heavily timbered, velocity fairly swift, bed of stream rocky with several channels at high water.

Discharge Measurements.—Four discharge measurements were obtained during 1914 at various stages. Stream generally runs dry during end of August, and remains so until following spring.

Winter Flow.—Ice conditions always exist on this stream throughout the winter.

Accuracy.—The accuracy of returns will eventually be high but more data are required before the stream can be properly rated.

DISCHARGE MEASUREMENTS of Canyon Creek above Heffley Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 2	C. B. Corbould	1,915	5	2·7	1·44		3·9
June 7	do	1,915	5	5·45	0·72	1·8	3·9
June 30	do	1,915	4·5	3·5	0·33	1·45	1·17
Aug. 13	do					0·15	0·0[1]

---

[1] Water standing in pools.

DAILY GAUGE HEIGHT AND DISCHARGE of Canyon Creek above Heffley Lake, for 1914.

Day.	June.	
	Gauge Height	Dis charge
	Feet.	Sec-ft
1		
2		
3	1·80	39
4	1·80	39
5	1·80	39
6	1·80	39
7		
8	1·76	35
9		
10	1·72	31
11	1·70	28
12		
13		
14	1·60	20
15		
16		
17	1·50	14
18		
19		
20		
21	1·40	11
22		
23	1·45	[illegible]
24	...	
25		
26	1·55	17
27	..	
28		
29	1·50	14
30	1·45	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Canyon Creek above Heffley Lake, for 1914—*Con.*

Day	July.		August.	
	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0·45	0·1
2				
3	1·35	0·9		
4			0·40	0·1
5				
6			0·35	0·1
7	1·20	0·7		
8				
9	1·10	0·6		
10			0·25	0·05
11				
12				
13	0·95	0·4	0·1	0·0
14				
15				
16				
17				
18	0·75	0·3		0·0
19				
20				
21	0·70	0·3		
22				
23				
24				
25	0·60	0·2		
26				0·0
27				
28	0·50	0·2		
29				
30				
31				

MONTHLY DISCHARGE of Canyon Creek above Heffley Lake, for 1914.

(Drainage area, 7 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June	3·9	1·1	2·6	0·4	0·4	155
July	0·9	0·2	0·4	0·06	0·07	24·6
August	0·1	0·0	0·05	0·01	0·01	3·0

NOTE.—Station was established on June 7. Creek stopped running on August 10. No precipitation records available.

CLEARWATER RIVER (2047).

Location.—Near Raft River; Water District No. 2.

Records Available.—August 12 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—2,400 square miles.

Gauge.—Standard chain gauge graduated in feet and tenths, and read by Theo. Brookfield, rancher.

Measuring Section.—500 feet above gauge; width of channel 230 feet. Bed of stream rocky and permanent. Deepest point in measuring section at highest recorded water level 22 feet. Highest mean velocity 7.78 feet per second.

Methods of Gauging.—Discharge measurements are made from car suspended from ¾ inch steel cable.

Channel.—The channel varies in width throughout its course from 100 to 400 feet, and passes over several small falls and rapids.

Winter Flow.—The Clearwater river is seldom frozen during winter to the extent of materially affecting the accuracy of returns.

Accuracy.—The accuracy on the whole will be high, the curve being well rated, and the only possibility of error being in the present chain gauge which it is proposed to replace early in the spring of 1915.

Confluence of Myrtle and Clearwater rivers.

Photograph by F. R. Archibal

The Myrtle river is in the foreground flowing north-westerly. The Clearwater, flowing south swi to the south-west at its junction with the Myrtle. Both rivers have storage facilities for power purpo

CLEARWATER RIVER.

Twenty-four miles above its confluence with the North Thomspon the two principal component tributaries of the Clearwater river join. The more westerly stream of the two, geographers have named the Clearwater, while the other, which is probably the more important, is known as the Myrtle.

The Clearwater river above its junction with the Myrtle.—The Clearwater river rises in the steep hills and glaciers surrounding Upper Clearwater lake, a sheet of water with a superficial area of some 15 square miles, distant about 5½ miles by trail from the head of Quesnel lake. Mr. F. C. Green, B.C.L.S., places the elevation of Upper Clearwater lake at 405 feet above Quesnel lake, whose altitude the Geological Survey gives as 2,250 feet above sea-level. Clearwater river, discharging from its south end is said to fall 600 feet in a distance of 7 miles in its tumultuous course to Lower Clearwater lake. (This amount is thought to be overestimated since it makes the elevation of Lower Clearwater lake coincide with the elevation of the confluence of the Myrtle and Clearwater as determined by Mr. R. H. Lee, B.C.L.S.) Two tributaries join from the east in this distance Goat creek about a mile and a half south of the Upper lake, and the outlet of Blue lake about 4 miles farther down. Blue lake lies but a quarter of a mile east, and is represented as being a beautiful rockbound sportsman's paradise, with rainbow trout and cariboo in abundance. It is said to be about 15 miles long and 1 mile wide. Navigation by canoe is possible between Blue lake and Lower Clearwater lake, which is about 17 miles long and a mile wide. The Clearwater river, draining from its south end joins the Myrtle about 13 miles below at an elevation of about 2,000 feet above the sea. Little information could be obtained regarding the course of the Clearwater between Lower Clearwater lake and the Myrtle river.

The Myrtle river.—(see description Myrtle river.)

The Clearwater river below its junction with the Myrtle.—In the twenty-four miles of its course to the North Thompson, the Clearwater river drops about 675 feet at a rate of about 31 feet to the mile. It passes through a series of rocky canyons in its course, but so far as is known there is no large natural concentrated fall. The width of the river in this part is from 200 to 500 feet.

The principal tributaries are:—

FROM THE WEST.

Mahood river (or Bridge creek).—This stream drains Canim and Mahood lakes and enters about 4 miles below the Myrtle. It is said to be a small stream "about the size of the Little Clearwater." Its drainage area is very large, though the probable low precipitation, and evaporation losses from the two large regulating lakes are contributing causes to a low run-off.

FROM THE EAST.

Little Clearwater river joins the Clearwater about 15 miles above its confluence with the Thompson. (See hydrographic data, Little Clearwater river.)

Beaver creek.—A small mountain torrent, 40 to 50 feet wide and a reported fall of 750 feet in three quarters of a mile. (June 10, 1914, 190 second-feet high water.) Joins Clearwater about 14 miles above North Thompson.

Bear creek, which joins the Clearwater about 8 miles from its mouth, is said to fall 800 feet in its last mile. (On June 11, 1914, its flow was 162 second-feet and on September 4, 1914, it was 7·4 second-feet.

Candle creek, joining about 4 miles from the river's mouth had a flow of 19·7 second-feet on June 11, and on 0·3 second-feet on August 29, 1914.

The station on the Clearwater was established by Mr. K. G. Chisholm in March, 1914, and cable station installed from which numerous meterings covering the range of stream-flow have been obtained. (See report British Columbian Minister of Lands for 1913 and, in particular articles on the Clearwater valley by Messrs. Green and Lee, British Columbia Land Surveyors.)

DISCHARGE MEASUREMENTS of Clearwater River near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec	Feet	Sec. ft
April 16	K. G. Chisholm	1055	200	2,043	2·04	0·57	4,170
May 30	E. Tredcroft	1923	234·5	2,778	5·84	4·8	16,227[1]
" 31	"	1923	234	2,735	5·75	4·6	15,719[1]
June 1	"	1923	234	2,667	5·56	4·1	14,854[1]
" 12	"	1923	236	2,880	6·8	5·3	19,650[1]
" 15	"	1923	238	3,049	7·63	6·0	23,292[1]
" 16	"	1923	239	3,174	7·93	6·5	25,165[1]
" 17	"	1923	240	3,300	7·78	7·0	25,703[1]
" 25	"	1923	234	2,599	5·66	4·2	14,717[1]
Sept. 19	E. M. Dann and E. H. Tredcroft	1923	201·5	2,022	2·61	1·29	5,281

[1] Surface velocity; coefficient 0·89.

DAILY GAUGE HEIGHT AND DISCHARGE of Clearwater River near mouth, for 1914.

(Drainage area, 2,400 square miles.)

DAY.	April.		May		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft
1	1·50	5,650	1·70	6,100	4·10	14
2	1·50	5,650	1·90	6,600	4·70	17
3	1·40	5,450	2·60	8,700	5·40	19,975
4	1·40	5,450	2·60	8,700	6·05	22
5	1·40	5,450	2·70	9,050	6·20	23
6	1·30	5,275	2·70	9,050	5·90	22
7	1·20	5,100	2·70	9,050	5,75	21
8	1·10	4,950	2·70	9,050	5·50	20
9	1·00	4,800	2·90	9,775	5,30	19
10	0·70	4,360	3·10	10,525	5·30	19
11	0·60	4,230	3·40	11,675	5·30	19
12	0·50	4,110	3·60	12,475	5·30	19
13	0·20	3,750	3·90	13,675	5·30	19
14	0·00	3,590	4·20	14,875	5·50	20
15	0·40	3,990	5·30	19,550	6·00	22
16	0·60	4,230	5·60	20,825	6·60	25
17	0·70	4,360	5·50	20,400	7·10	27
18	0·80	4,490	5·50	20,400	7·20	27
19	0·90	4,640	5·40	19,975	7·05	27
20	1·00	4,800	5·30	19,550	6·80	26
21	1·00	4,800	5·30	19,550	6·60	25
22	1·10	4,950	5,40	19,975	6·30	23
23	1·10	4,950	5·50	20,400	6·00	22
24	1·10	4,950	5·90	22,150	5·60	20
25	1·20	5,100	6·00	22,600	5·30	19
26	1·20	5,100	5·90	22,150	5·20	19
27	1·20	5,100	5·65	21,037	5·20	19
28	1·30	5,275	5·35	19,762	5·30	19
29	1·40	5,450	5·10	18,700	5·40	19
30	1·50	5,650	4·80	17,425	5·50	20
31	....	....	4·60	16,575	......	
Total	....	145,650	......	490,324	....	647

DAILY GAUGE HEIGHT AND DISCHARGE of Clearwater River near mouth, for 1914 —*Con.*

(Drainage area, 2,400 square miles.)

Day	July		August		September.		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	5·60	20,825	3·80	13,225	2·05	7,012	3·00	10,150	1·10	4,950	0·00	3,590
2	5·90	22,150	3·70	12,875	2·05	7,012	3·00	10,150	1·20	5,100	−0·10	3,490
3	6·00	22,600	3·70	12,875	1·95	6,737	2·80	9,400	1·30	5,275	−0·10	3,490
4	6·00	22,600	3·60	12,475	1·85	6,475	2·60	8,700	1·20	5,100	−0·10	3,490
5	6·10	23,050	3·60	12,475	1·75	6,225	2·30	7,725	1·10	4,950	−0·10	3,490
6	6·10	23,050	3·50	12,075	1·75	6,225	2·10	7,150	1·00	4,800	−0·20	3,400
7	5·90	22,150	3·50	12,075	1·75	6,225	1·90	6,600	0·90	4,640	−0·20	3,400
8	5·70	21,250	3·50	12,075	1·75	6,225	1·70	6,100	0·90	4,640	−0·30	3,300
9	5·40	19,975	3·40	11,675	1·85	6,475	1·60	5,850	0·80	4,490	−0·40	3,200
10	5·30	19,550	3·10	10,525	1·85	6,475	1·50	5,650	0·80	4,490	−0·50	3,110
11	5·30	19,550	3·00	10,150	1·95	6,737	1·40	5,450	0·70	4,360	−0·60	3,020
12	5·30	19,550	2·80	9,400	1·75	6,225	1·30	5,275	0·70	4,360	−0·60	3,020
13	5·50	20,400	2·60	8,700	1·55	5,750	1·20	5,100	0·60	4,230	−0·60	3,020
14	5·70	21,250	2·50	8,350	1·35	5,362	1·10	4,950	0·50	4,110	−0·60	3,020
15	6·00	22,600	2·50	8,350	1·15	5,025	1·00	4,800	0·40	3,990	−0·70	2,920
16	6·00	22,600	2·50	8,350	1·05	4,875	0·90	4,640	0·30	3,870	−0·70	2,920
17	5·70	21,250	2·50	8,350	1·05	4,875	1·00	4,800	0·30	3,870	−0·70	2,920
18	5·30	19,550	2·30	7,725	1·10	4,950	1·20	5,100	0·20	3,750	−0·70	2,920
19	5·10	18,700	2·45	8,187	1·40	5,540	1·40	5,450	0·20	3,750	−0·70	2,920
20	4·90	17,850	2·45	8,187	1·60	5,850	1·50	5,650	0·10	3,640	−0·70	2,920
21	4·80	17,425	2·35	7,875	1·70	6,100	1·50	5,650	0·10	3,640	−0·70	2,920
22	4·60	16,575	2·35	7,875	1·70	6,100	1·40	5,450	0·10	3,640	−0·60	3,020
23	4·60	16,575	2·25	7,575	1·70	6,100	1·30	5,275	0·10	3,640	−0·60	3,020
24	4·60	16,575	2·25	7,575	1·80	6,350	1·30	5,275	0·10	3,640	−0·70	2,920
25	4·50	16,150	2·15	7,287	1·80	6,350	1·20	5,100	0·10	3,640	−0·70	2,920
26	4·50	16,150	2·05	7,012	2·00	6,875	1·20	5,100	0·00	3,590	−0·80	2,820
27	4·40	15,725	2·05	7,012	2·20	7,425	1·10	4,950	0·00	3,590	−0·80	2,820
28	4·20	14,875	2·15	7,287	2·40	8,025	1·00	4,800	0·00	3,590	−0·90	2,720
29	4·10	14,475	2·15	7,287	2·80	9,400	0·90	4,640	0·10	3,640	−0·90	2,720
30	4·00	14,075	2·15	7,287	3·00	10,150	0·90	4,640	0·10	3,640	−0·90	2,720
31	3·90	13,675	2·05	7,012			0·90	4,640			−0·90	2,720
Total		592,775		289,183		193,060		184,210		124,615		94,880

Monthly Discharge of Clearwater River near mouth, for 1914.

(Drainage area, 2,400 square miles.)

Month	Discharge in Second Feet				Run-Off	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet
April	5,650	3,500	4,855	2.0	2.2	[illegible]
May	22,600	6,100	15,494	6.5	7.5	[illegible]
June	27,950	14,475	21,567	9.0	10.0	[illegible]
July	23,050	13,675	19,122	8.0	9.2	[illegible]
August	13,225	7,012	9,328	3.9	4.5	[illegible]
September	10,150	4,875	6,435	2.7	3.0	[illegible]
October	10,150	4,640	5,942	2.5	2.9	[illegible]
November	5,275	3,590	4,154	1.7	1.9	[illegible]
December	3,590	2,720	3,061	1.3	1.5	[illegible]
The period	27,950	2,720	9,905	4.1	42.8	[illegible]

NOTE.—There are no available precipitation records of the Clearwater catchment basin. Maps are unreliable, an[illegible] would appear from the run-off figures shown that the drainage area given is not as large as the actual drainage area o[illegible] river. Since it was taken off the most reliable map available, however, it has been thought b[illegible] not to alter it m[illegible] on the evidence of run-off figures for a period of one year.

LITTLE CLEARWATER CREEK (2056).

Location.—Near Raft River, Water District No. 2.

Records Available.—June 17 to December 31, 1914.

Drainage Area.—One hundred square miles.

Gauge.—Standard vertical staff gauge set near footbridge at crossing of Myrtle River trail, and read by P. McDougal, rancher.

Channel.—Average width 40 feet. The velocities are low even at high water, seldom exceeding 2·0 feet per second. Maximum flow recorded during 1914, 272 second-feet. Bed of stream at measuring section composed of mud and silt.

Winter Flow.—Partial ice conditions exist during latter end of January and beginning of February.

Accuracy.—The accuracy of returns will eventually be high, but owing t[illegible] the lateness of the season when the station was established, and the difficu[illegible] means of access to this stream, especially during the winter months, only two discharge measurements were obtained during 1914.

LITTLE CLEARWATER RIVER.

The Little Clearwater is tributary to the Clearwater river at a point abo[illegible] 15 miles north of the latter's junction with the North Thompson. It rises [illegible] the [illegible] River range of mountains and flows in a southwesterly direction. [illegible] is [illegible] about 12 miles in length, its average width about 50 feet, and [illegible] depth during ordinary stages about 3 or 4 feet. Its flow at the gauging statio[illegible] on McDougall's ranch (lot 3188), is somewhat sluggish, but in the lowest [illegible] miles of its course it falls at the rate of about 50 feet to the mile. High wat[illegible] occurs in June, and during January and February and sometimes part of De[illegible]cember and March the stream is frozen over. A station was established [illegible] Mr. E. H. Tredcroft on June 6, 1915, on lot 3188, which is about 7 miles fro[illegible] the Clearwater junction.

DISCHARGE MEASUREMENTS of Little Clearwater River near Green Mountain, for 1914.

Date	Hydrographer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
1914							
June 6	E. H. Tredcroft	1923	41	147	1.8	2.5	272
Sept. 3	E. H. Tredcroft and C. B. Corbould	1923	37	68	0.2	0.6	13.7

An effort will be made to completely rate this station during 1915.

DAILY GAUGE HEIGHT AND DISCHARGE of Little Clearwater River near Green Mountain for 1914.

Day	June	
	Gauge Height	Discharge
	Feet.	Sec.-ft.
17	2.7	306
18	2.8	32
19	2.6	289
20	2.5	272
21	2.2	221
22	2.8	323
23	2.6	289
24	2.4	255
25	2.6	289
26	2.8	323
27	2.5	272
28	2.4	255
29	2.3	238
30	2.1	205

DAILY GAUGE HEIGHT AND DISCHARGE of Little Clearwater River near Green Mountain, for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec ft
1	2·0	188	1·0	46	0·6	13	1·3	81	1·0	46	0·8	27
2	1·9	172	1·0	46	0·6	13	1·2	68	1·1	56	0·8	27
3	1·8	156	1·0	46	0·6	13	1·2	68	1·0	46	0·8	27
4	1·7	140	1·0	46	0·6	13	1·2	68	1·0	46	0·7	20
5	1·6	124	0·9	36	0·6	13	1·1	56	0·9	36	0·7	20
6	1·5	109	1·4	94	0·6	13	1·1	56	0·9	36	0·7	20
7	1·4	94	1·1	56	0·6	13	1·0	46	0·9	36	0·7	20
8	1·3	81	1·0	46	0·7	20	1·0	46	0·9	36	0·7	20
9	1·2	68	0·9	36	0·9	36	1·0	46	0·9	36	0·7	20
10	1·2	68	0·9	36	0·9	36	1·0	46	0·9	36	0·6	13
11	1·2	68	0·9	36	1·2	68	1·0	46	0·9	36	0·6	13
12	1·2	68	0·9	36	1·2	68	0·9	36	0·9	36	0·6	13
13	1·2	68	0·9	36	1·2	68	1·1	56	0·9	36	0·6	13
14	1·9	172	0·8	27	1·0	46	1·0	46	1·0	46	0·7	20
15	2·5	272	0·8	27	0·9	36	1·0	46	0·9	36	0·7	20
16	1·6	124	0·8	27	0·9	36	1·0	46	0·9	36	0·7	20
17	1·7	140	0·8	27	1·1	56	1·7	140	0·9	36	0·7	20
18	1·6	124	0·8	27	1·6	124	1·4	94	0·9	36	0·7	20
19	1·4	94	0·7	20	1·2	68	1·2	68	0·9	36	0·7	20
20	1·6	124	0·7	20	1·2	68	1·1	56	0·8	27	0·7	20
21	1·6	124	0·8	27	1·1	56	1·1	56	0·8	27	0·7	20
22	1·4	94	0·8	27	1·1	56	1·0	46	0·8	27	0·7	20
23	1·4	94	0·8	27	1·2	68	1·0	46	0·8	27	0·7	20
24	1·6	124	0·8	27	1·1	56	0·9	36	0·9	36	0·7	20
25	1·4	94	0·7	20	1·1	56	0·9	36	0·9	36	0·7	20
26	1·3	81	0·7	20	1·1	56	0·9	36	0·9	36	0·7	20
27	1·9	172	0·7	20	1·9	172	0·9	36	0·8	27	0·7	20
28	1·6	124	0·7	20	1·6	124	0·9	36	0·8	27	0·6	13
29	1·4	94	0·6	13	1·6	124	0·9	36	0·8	27	0·6	13
30	1·2	68	0·6	13	1·5	109	1·0	46	0·8	27	0·6	13
31	1·1	56	0·6	13	....	......	1·0	46	....	....	0·6	13

MONTHLY DISCHARGE of Little Clearwater River near Green Mountain, for 1914.

(Drainage area, 100 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
June	323	205	276	2·76	3·08	[illegible]
July	272	56	115	1·15	1·[illegible]2	[illegible]
August	94	13	32	0·32	0·[illegible]7	[illegible]
September	172	13	57	0·57	0·63	[illegible]
October	140	36	54	0·54	0·62	[illegible]
November	56	27	36	0·36	0·39	[illegible]
December	27	13	19	0·19	0·22	[illegible]
The period	323	13	84·1	0·84	6·[illegible]	[illegible]

[1] Station was established on June 17; results for June are therefore only approximate.
No precipitation records available.

CHERRY CREEK (2005).

Location.—Section 14, township 19, range 19, west 6th Meridian.

Records Available.—June 5 to September 1, 1911; April 24 to September 15, 1912; April 19 to October 19, 1913; May 1 to August 19, 1914.

Drainage Area.—Sixty-two square miles.

Gauge.—Standard chain gauge installed during 1914 in canyon, and read daily by F. Bowers, during high water, and twice weekly during low water. To replace station at Cornwall's ranch.

Channel.—Is straight at measuring section. Velocity swift at all stages. Control is fairly good.

Discharge Measurements.—Three discharge measurements were obtained during 1914 by wading at all stages.

Winter Flow.—Stream generally runs dry during August or September.

Accuracy.—Owing to shifting channel, too much reliance cannot be placed on returns from old station, but returns for new station established 1914 point to an exceptionally high degree of accuracy eventually being obtained.

DISCHARGE MEASUREMENTS of Cherry Creek above Bower's Ranch, for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 13	E. H. Tredcroft	1055	14	14	5·02	1·7	70·3
June 11	C. Corbould	1915	12	5·1	1·8	0·7	9·0
July 3	do	1915	7	1·7	0·8	0·5	1·5

An effort will be made to completely rate this station during 1915. See meterings listed under miscellaneous measurements taken at Cornwall's ranch above diversion.

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek near Bower's Ranch, for 1914.

Day.	May.		June	
	Gauge Height	Dis-charge	Gauge Height	D. charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	....	14·5	0·65	6·9
2	....	15·8	0·65	6·9
3	....	17·2	0·60	4·9
4	....	18·5	0·60	4·9
5	....	19·9	0·60	4·9
6	....	21·2	0·60	4·9
7	....	22·6	0·60	4·9
8	....	24·0	0·65	6·9
9	....	44·0	0·65	6·9
10	....	65·0	0·65	6·9
11	....	86·0	0·70	9·0
12	....	78·2	0·70	9·0
13	1·70	70·3	0·70	9·0
14	1·70	70·3	0·65	6·9
15	1·60	62·8	0·65	6·9
16	1·55	59·1	0·65	6·9
17	1·45	51·9	0·60	4·9
18	1·40	48·5	0·60	4·9
19	1·40	48·5	0·55	3·2
20	....	38·4	0·55	3·2
21	....	28·2	0·55	3·2
22	0·90	18·0	0·50	1·4
23	0·90	18·0	0·55	3·2
24	0·85	15·5	0·55	3·2
25	0·80	13·0	0·60	4·9
26	0·80	13·0	0·55	3·2
27	0·75	11·0	0·55	3·2
28	0·70	9·0	0·55	3·2
29	0·70	9·0	0·55	3·2
30	0·65	6·9	0·55	3·2
31	0·65	6·9	....	

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek near Bower's Ranch, for 1914—*Con.*

DAY.	July.		August.	
	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet	Sec.-ft.
1	0·50	1·4		0·4
2	0·50	1·4		0·3
3	0·50	1·4	0·30	0·3
4	0·45	1·1		0·3
5	0·45	1·1	0·30	0·3
6	0·40	0·8		0·3
7	0·40	0·8	0·30	0·3
8	0·40	0·8		0·3
9	0·35	0·5		0·3
10	0·35	0·5	0·30	0·3
11	0·35	0·5		0·3
12	0·35	0·5	0·30	0·3
13	0·35	0·5		0·3
14	0·30	0·3	0·30	0·3
15	0·30	0·3		0·3
16	0·30	0·3		0·2
17	0·30	0·3	0·25	0·2
18	0·30	0·3		0·2
19	0·30	0·3	0·25	0·2
20		1·8		
21	0·55	3·2		
22		6·1		
23	0·70	9·0		
24		8·0		
25	0·65	6·9		
26		5·9		
27	0·60	4·9		
28		2·8		
29	0·40	0·8		
30		0·7		
31	0·35	0·5		

MONTHLY DISCHARGE of Cherry Creek near Bower's Ranch, for 1914.

(Drainage area, 30 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May	86	6·9	33·1	1·10	1·12	2,035
June	9	1·4	5·2	0·17	0·19	307
July	9	0·3	2·05	0·07	0·08	126·3
August	0·4	0·0	0·17	0·006	0·007	10·4
The period	86	0·0	10·13	0·34	1·397	2,478·7

NOTE.—Station established May 13 to replace station at Cornwall's ranch, where a constantly shifting channel made results unreliable. It was also alleged that a very large loss by seepage occurred between the present station and Cornwall's ranch. Data acquired during 1914 disprove this allegation.

From May 1 to May 13, figures shown have been compiled from miscellaneous measurements at Cornwall's ranch on April 27, May 8, and May 11, by interpolation.

The creek stopped flowing at the gauge on August 19.

ESSELL CREEK (2011).

Location.—Section 36, township 17, range 14, west 6th meridian.

Records Available.—May 25 to September 30, 1911; April 1 to September 7, 1912; April 16 to September 14, 1913; April 1 to December 4, 1914.

Drainage Area.—Six square miles.

Gauge.—Standard staff gauge read tri-weekly by T. F. Teagle.

Channel.—The channel is gravelly and permanent. Control is good, and velocities are not excessive.

Discharge Measurements.—Well-distributed meterings have been taken at all stages of water.

Winter Flow.—Winter conditions are not, as a rule, severe; the stream is usually dry during the winter months.

A storage dam on Summit lake controls its flow, which is augmented by a diversion from Monte creek.

Accuracy.—The accuracy of results on the whole is fairly high, and should fall within ten per cent.

DISCHARGE MEASUREMENTS of Essell Creek below Summit Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft
May 7	E. M. Dana & E. H. Tredcroft	1055	17	11·5	3·06	1·47	[illegible]
June 24	C. B. Corbould	1915	11	9·1	2·47	1·30	[illegible]
July 22	"	1915	9·5	5·23	0·80	0·95	[illegible]
Sept. 25	"	1915	5·5	1·03	0·56	0·70	[illegible]

For further measurements see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Essell Creek below Summit Lake, for 1914.

Day	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·90	3·2		25·8		35·0
2		3·3	1·38	28·5		34·5
3		3·4		32·6	1·45	34·0
4	0·91	3·5		36·7		36·7
5		3·4		40·8		39·5
6		3·4	1·58	44·8	1·55	42·2
7		3·3		48·3		42·7
8	0·90	3·2		51·8		43·1
9		3·8	1·70	55·3		43·5
10		4·4		55·3	1·57	44·0
11	0·97	5·0		55·3		42·5
12		4·6		55·5		41·1
13		4·1	1·70	55·3	1·52	39·7
14		3·6		66·3		38·6
15	0·90	3·2		77·3		37·6
16		3·4	2·05	88·3		36·6
17		3·6		82·4	1·47	35·6
18	0·92	3·7		76·4		33·0
19		3·9		70·4		30·4
20		4·1	1·80	64·4	1·37	27·8
21		4·3		62·0		27·4
22	0·95	4·5		59·5		27·0
23		4·7	1·72	57·1		26·6
24		4·8		55·0	1·33	26·2
25	0·97	5·0		52·8		27·5
26		8·9		50·7		28·8
27		12·8		48·6	1·40	30·0
28		16·7	1·60	46·5		30·0
29	1·27	20·5		42·8		30·0
30		23·2		39·2		30·0
31			1·47	35·6		

DAILY GAUGE HEIGHT AND DISCHARGE of Essell Creek below Summit Lake, for 1914—*Con.*

DAY.			August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Se
1	1·40	30·0	1·10	10·2		1·7		0·9		2·5	0·82	
2		28·8		9·1	0·80	1·7		1·0		2·5		
3		27·5		8·0		1·6	0·75	1·2		2·5		
4	1·35	26·2		6·9		1·4		1·1	0·85	2·5	0·85	
5		24·8	1·00	5·8	0·75	1·2		1·0		2·5		
6		23·4		5·6		1·2		0·9		2·6		
7		22·0		5·3		1·2	0·72	0·8	0·87	2·7		
8	1·27	20·5	0·97	5·0		1·2		0·7		2·7		
9		21·2		5·2	0·75	1·2		0·6		2·6		
10		21·8		5·4		1·0	0·70	0·6		2·6		
11	1·30	22·5		5·6		0·8		0·8	0·85	2·5		
12		22·0	1·00	5·8	0·70	0·6		1·0		2·3		
13		21·5		4·9		0·6		1·2		2·0		
14		21·0		4·0		0·6	0·77	1·4	0·80	1·7		
15	1·27	20·5	0·90	3·2		0·6		1·5		1·9		
16		17·0		3·2	0·70	0·6		1·6		2·2		
17		13·6		3·2		0·6	0·80	1·7		2·4		
18	1·10	10·2		3·2		0·6		1·7	0·87	2·7		
19		8·9	0·90	3·2	0·70	0·6		1·7		2·7		
20		7·6		3·6		0·6		1·7		2·6		
21		6·3		4·0		0·6	0·80	1·7	0·85	2·5		
22	0·97	5·0	0·95	4·5		0·6		2·0		2·5		
23		4·4		3·8	0·70	0·6		2·2		2·6		
24		3·8		3·1		0·8	0·85	2·5		2·7		
25	0·90	3·2		2·4		1·0		2·5	0·87	2·7		
26		5·2	0·80	1·7	0·75	1·2		2·5		2·7		
27		7·2		1·7		1·1		2·5		2·6		
28		9·2		1·7		1·0	0·85	2·5	0·83	2·5		
29	1·12	11·3	0·80	1·7		0·9		2·5		2·3		
30		11·0		1·7	0·72	0·8		2·5		2·1		
31		10·6		1·7			0·85	2·5				

MONTHLY DISCHARGE of Essell Creek below Summit Lake, for 1914.

(Drainage area, 6 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.		
	Maximum	Minimum.	Mean
April	23·2	3·2	6·0
May	88·3	25·5	53·6
June	44·0	26·2	34·7
July	30·0	3·2	13·7
August	10·2	1·7	4·3
September	1·7	0·6	0·9
October	2·5	0·6	1·6
November	2·7	1·7	2·5
December	2·5	2·0	For period Dec 4th
The period	88·3	0·6	14·9

NOTE. Winter conditions obtained after December 4.

The indicated run-off of Essell creek is not a true function of the drainage area, since its natural flow is augm diversion from Monte creek to Summit lake. The flow out of Summit lake is also artificially controlled by a outlet.

No precipitation records available.

GUICHON CREEK (2014).

Location.—Near Mamit lake, Water District No. 3.

Records Available. — June 3 to December 31, 1911; January 1 to November 14, 1912; April 26 to September 29, 1913; April 1 to November 30, 1914.

Drainage Area.—Three hundred and fifteen square miles.

Gauge.—Standard vertical staff gauge read daily by O. Quenville.

Channel.—Channel is straight at measuring section. Velocities fairly high. Bed of stream composed of sand and gravel, and considered permanent.

Discharge Measurements.—Twenty three discharge measurements have been taken on this creek. Curve is well defined,

Winter Flow.—Ice conditions generally prevail on this stream throughout January and February.

Accuracy.—Curve has been well defined and results should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Guichon Creek above Mamit Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
June 16	C. B. Corbould	1,915	26·0	58·4	1·7	2·9	98·9

For further meterings made at other points on Guichon creek during 1914, see list of miscellaneous measurements.
For other hydrographic data see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Guichon Creek near Mamit Lake, for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·52	28·9	4·85	229·5	3·55	139·5
2	1·40	23·0	5·35	277·7	3·35	126·7
3	1·45	25·5	5·80	355·0	3 25	120·7
4	1·90	46·0	5·82	360·0	3·05	108·2
5	2·90	98·5	5·97	397·4	3·00	105·0
6	3·15	114·5	6·00	406·0	2·85	95·8
7	3·05	108·2	5·00	405 0	2·80	93·[illegible]
8	2·95	101·7	5·90	379·0	2·80	93·[illegible]
9	3·02	106·3	5·92	384·2	2·85	95·8
10	2·92	99·8	6·25	483·7	3·05	108·2
11	3·10	111·5	6·32	506·8	3·10	111·5
12	3 22	118·8	6·17	454·7	3·10	111·5
13	3 60	142·5	6·12	441·5	3·00	105·0
14	3·77	153·2	6·15	451·2	2·95	101·7
15	3·95	165·2	6·15	451·2	2·95	101·7
16	4·15	178·7	6·10	435·0	2·85	95·8
17	4·07	173·0	6·10	435·0	2·75	90·2
18	4·10	175·0	6·10	435·0	2·50	76·5
19	4·15	178·7	6·07	426·0	2·32	66·6
20	4·50	203·0	5·95	392·0	2·32	66·6
21	4·57	208·0	5·85	367·0	2·30	65·5
22	4·40	195·2	5·75	344·2	2·30	65·5
23	4·40	195·2	5·65	323·7	2·30	65·5
24	4·40	195·2	5·35	277·7	2·30	65·5
25	4·40	195·2	5·20	261·5	2·30	65·5
26	4·32	190·2	4·70	218·0	2·30	65·5
27	4 35	192·1	4·70	218·0	2·30	65·5
28	4·30	189·0	4·60	210·1	2·30	65·5
29	4·27	187·0	4·60	210·1	2·30	65·5
30	4·32	190 2	3·95	165·2	2·30	65·5
31		. .	3·70	149·0		

DAILY GAUGE HEIGHT AND DISCHARGE of Guichon Creek near Mamit Lake, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·30	65·5	1·50	28·0	1·10	12·0	1·15	14·0	1·20	16·0
2	2·20	60·5	1·47	26·5	1·10	12·0	1·15	14·0	1·20	16·0
3	2·10	55·5	1·45	25·5	1·10	12·0	1·15	14·0	1·20	16·0
4	2·00	50·5	1·45	25·5	1·10	12·0	1·15	14·0	1·20	16·0
5	1·92	46·9	1·45	25·5	1·10	12·0	1·15	14·0	1·20	16·0
6	1·90	46·0	1·45	25·5	1·05	10·0	1·15	14·0	1·20	16·0
7	1·90	46·0	1·45	25·5	1·07	10·8	1·15	14·0	1·37	21·8
8	1·90	46·0	1·50	28·0	1·10	12·0	1·15	14·0	1·30	19·0
9	1·80	41·0	1·55	30·2	1·15	14·0	1·15	14·0	1·25	17·5
10	1·80	41·0	1·60	32·5	1·20	16·0	1·17	14·8	1·25	17·5
11	1·80	41·0	1·52	28·9	1·20	16·0	1·20	16·0	1·20	16·0
12	1·75	39·0	1·42	24·0	1·20	16·0	1·20	16·0	1·20	16·0
13	1·70	37·0	1·30	19·0	1·20	16·0	1·20	16·0	1·20	16·0
14	1·65	34·7	1·30	19·0	1·25	17·5	1·40	23·0	1·20	16·0
15	1·62	33·4	1·30	19·0	1·30	19·0	1·37	21·8	1·20	16·0
16	1·60	32·5	1·30	19·0	1·30	19·0	1·25	17·5	1·20	16·0
17	1·60	32·5	1·30	19·0	1·30	19·0	1·25	17·5	1·20	16·0
18	1·60	32·5	1·30	19·0	1·30	19·0	1·22	16·6	1·20	16·0
19	1·60	32·5	1·27	18·1	1·35	21·0	1·20	16·0	1·20	16·0
20	1·50	28·0	1·25	17·5	1·35	21·0	1·20	16·0	1·20	16·0
21	1·50	28·0	1·25	17·5	1·25	17·5	1·20	16·0	1·25	17·5
22	1·50	28·0	1·25	17·5	1·20	16·0	1·20	16·0	1·25	17·5
23	1·50	28·0	1·25	17·5	1·20	16·0	1·20	16·0	1·25	17·5
24	1·50	28·0	1·20	16·0	1·20	16·0	1·20	16·0	1·25	17·5
25	1·50	28·0	1·20	16·0	1·20	16·0	1·20	16·0	1·25	17·5
26	1·50	28·0	1·20	16·0	1·20	16·0	1·20	16·0	1·25	16·9
27	1·40	23·0	1·10	12·0	1·20	16·0	1·20	16·0	1·25	17·5
28	1·40	23·0	1·10	12·0	1·17	14·8	1·20	16·0	1·20	16·0
29	1·40	23·0	1·20	16·0	1·15	14·0	1·20	16·0	1·20	16·0
30	1·40	23·0	1·15	14·0	1·15	14·0	1·20	16·0	1·20	16·0
31	1·40	23·0	1·15	14·0			1·20	16·0		......

MONTHLY DISCHARGE of Guichon Creek near Mamit Lake, for 1914.

(Drainage area, 315 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	208·0	23·0	142·9	0·45	0·5	8,503
May	506·8	149·0	346·7	1·1	1·2	21,317
June	139·5	65·5	89·4	0·28	0·31	5,320
July	65·5	23·0	36·3	0·11	0·13	2,232
August	32·5	12·0	20·7	0·07	0·08	1,273
mber	21·0	12·0	15·4	0·05	0·06	916
r	21·8	14·0	15·9	0·05	0·06	978
mber	21·8	16·0	16·7	0·05	0·06	994
mber	.....	.....	.....	.....	.....	....
nnual	506·8	12·0	85·5	0·27	2·46	41,533

TE.—No precipitation data are available, but the total rainfall (including snowfall expressed in terms of rainfall) is ly 15 inches.

HEFFLEY CREEK—UPPER (2019).

Location.—Section 9, township 22, range 16, west 6th meridian.

Records Available.—May 25 to December 8, 1911; April 1 to Septemb 20, 1912; May 11 to September 19, 1913; May 1 to December 9, 1914.

Drainage Area.—Twenty-eight square miles.

Gauge.—Standard vertical staff gauge read daily by F. S. Lawrence.

Channel.—Straight at measuring section and permanent bed.

Discharge Measurements.—Curve is well defined with series of metering at all stages.

Winter Flow.—Ice conditions generally prevail during January and February. A dam at Heffley lake regulates the flow.

Accuracy.—The accuracy is considered to be fairly high, results should fall within 10 per cent at all stages.

DISCHARGE MEASUREMENTS of Heffley Creek below Heffley Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height	Dischar
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec
April 28	K. G. Chisholm	1.055	8·0	5·30	0·77	3·75	
June 3	C. B. Corbould	1.915	10·0	7·03	0·90	3·92	
June 30	do	1.915	10·0	6·50	0·91	3·90	
Aug. 11	do	1.915	10·0	10·60	2·10	4·24	
Oct. 29	do	1.673	8·0	3·47	0·28	3·40	

For further measurements during 1914 on this stream, see Heffley Creek Lower Station, and for further hydrogra data see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Heffley Creek below Heffley Lake, for 1914.

Day	April.		May.		June	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			3·80	4·5	3·90	5·9
2			3·90	5·9	3·90	5·9
3		3·1	4·00	8·3	3·90	5·9
4		4·4	4·00	8·3	3·92	6·3
5		5·7	4·00	8·3	3·95	7·1
6		4·4	3·90	5·9	3·95	7·1
7		4·4	3·90	5·9	4·05	10·2
8		4·4	3·90	5·9	4·04	10·2
9		4·4	3·95	7·1	4·10	12·2
10	...	4·4	4·00	8·3	4·10	12·2
11		4·4	4·05	10·2	4·10	12·2
12		4·4	4·25	23·2	4·05	10·2
13		4·4	4·30	27·8	4·05	10·2
14		5·7	4·30	27·8	4·05	10·2
15		5·7	4·40	38·1	4·00	8·3
16		5·7	4·55	56·5	4·00	8·3
17		5·7	4·55	56·5	4·00	8·3
18		5·7	4·55	56·5	4·00	8·3
19		5·7	4·50	49·8	3·95	7·1
20		5·7	4·50	49·8	3·95	7·1
21		3·6	4·45	43·9	3·90	5·9
22		2·8	4·30	27·8	3·85	5·2
23		2·8	4·05	10·2	3·90	5·9
24		2·8	4·00	8·3	3·95	7·1
25		3·3	3·95	7·1	4·00	8·3
26		3·3	3·95	7·1	3·95	7·1
27		2·9	3·90	5·9	3·90	5·9
28		4·0	3·95	7·1	3·90	5·9
29		4·0	3·90	5·9	3·90	5·9
30		4·5	3·90	5·9	3·90	5·9
31	...	...	3·90	5·9	......	......

Daily Gauge Height and Discharge of Heffley Creek below Heffley Lake, for 1914—*Con.*

Day	July.		August.		September		October.		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	D cha
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Se
1	3·85	5·2	4·25	23·2	3·65	3·1	·50	2·2	3·49	2·2	3·45	
2	3·85	5·2	4·25	23·2	3·65	3·1	3·50	2·2	3·45	2·0	3·45	
3	3·80	4·5	4·25	23·2	3·60	2·8	3·50	2·2	3·45	2·0	3·45	
4	3·90	5·9	4·25	23·2	3·58	2·7	3·50	2·2	3·45	2·0	3·45	
5	3·90	5·9	4·25	23·2	3·55	2·5	3·50	2·2	3·45	2·0	3·45	
6	3·90	5·9	4·25	23·2	3·55	2·5	3·50	2·2	3·45	2·0	3·45	
7	4·00	8·3	4·25	23·2	3·55	2·5	3·50	2·2	3·45	2·0	3·42	
8	4·00	8·3	4·20	18·7	3·55	2·5	3·47	2·1	3·48	2·1	3·40	
9	4·00	8·3	4·15	15·4	3·55	2·5	3·45	2·0	3·46	2·0		
10	4·00	8·3	4·10	12·2	3·55	2·5	3·43	1·9	3·46	2·0		
11	3·95	7·1	4·25	23·2	3·55	2·5	3·43	1·9	3·47	2·1		
12	3·90	5·9	4·20	18·7	3·55	2·5	3·45	2·0	3·48	2·1		
13	3·85	5·2	4·15	15·1	3·55	2·5	3·45	2·0	3·48	2·1		
14	3·85	5·2	4·15	15·1	3·58	2·7	3·45	2·0	3·48	2·1		
15	3·90	5·9	4·10	12·2	3·58	2·7	3·45	2·0	3·48	2·1		
16	3·85	5·2	4·05	10·2	3·55	2·5	3·45	2·0	3·47	2·1		
17	3·80	4·5	4·00	8·3	3·55	2·5	3·46	2·1	3·46	2·0		
18	3·80	4·5	4·00	8·3	3·55	2·5	3·48	2·1	3·45	2·0		
19	3·75	4·0	4·00	8·3	3·55	2·5	3·49	2·2	3·45	2·0		
20	3·80	4·5	3·95	7·1	3·55	2·5	3·49	2·2	3·45	2·0		
21	4·00	8·3	3·95	7·1	3·55	2·5	3·45	2·0	3·43	1·9		
22	4·00	8·3	3·90	5·9	3·55	2·5	3·45	2·0	3·43	1·9		
23	4·05	10·2	3·85	5·2	3·55	2·5	3·45	2·0	3·42	1·9		
24	4·20	18·7	3·80	4·5	3·55	2·5	3·42	1·9	3·42	1·9		
25	4·20	18·7	3·75	4·0	3·55	2·5	3·41	1·8	3·45	2·0		
26	4·20	18·7	3·75	4·0	3·55	2·5	3·41	1·8	3·45	2·0		
27	4·20	18·7	3·75	4·0	3·55	2·5	3·41	1·8	3·45	2·0		
28	4·20	18·7	3·75	4·0	3·51	2·3	3·40	1·8	3·45	2·0		
29	4·20	18·7	3·75	4·0	3·50	2·2	3·40	1·8	3·45	2·0		
30	4·20	18·7	3·65	3·1	3·50	2·2	3·40	1·8	3·45	2·0		
31	4·25	23·2	3·60	2·8			3·40	1·8				

Monthly Discharge of Heffley Creek below Heffley Lake, for 1914.

(Drainage area, 28 square miles.)

Month	Discharge in Second Feet.				Run-Off	
	Maximum.	Minimum	Mean	Per square mile.	Depth in inches on Drainage area.	To of acre
April	5·7	2·8	4·4	0·15	0·17	
May	56·5	4·5	19·3	0·7	0·8	
June	12·2	5·9	7·9	0·3	0·33	1
July	23·2	4·0	9·6	0·3	0·35	
August	23·2	2·8	12·3	0·4	0·46	
September	3·1	2·2	2·5	0·09	0·10	
October	2·2	1·8	2·0	0·07	0·08	
November	2·2	1·9	2·0	0·07	0·08	
December	2·0		for period	December 1	to December 8	
The period	56·5	1·8	7·5	0·26	2·37	

NOTE.—Ice conditions after December 8.

April flow compiled from flow at Heffley Creek (upper station) plus the flow in Anderson's and Crawshaw's div of Heffley creek.

Regular station established at outlet of Heffly lake on April 27 to replace the three former stations mentioned

The flow at this station is artificially controlled to some extent by a dam on Heffley Lake.

HEFFLEY CREEK, LOWER (2018).

Location.—Section 11, township 22, range 17, west 6th meridian.

Records Available.—August 19 to October 31, 1911; April 3 to September 15, 1912; April 13 to September 15, 1913; April 1 to December 6, 1914.

Drainage Area.—65 square miles.

Gauge.—Vertical staff gauge read daily by Mrs J. Austin.

Channel.—About 15 feet wide with rocky bed. The flow varies from a minimum of zero to a maximum of 55 cubic feet per second. The flow is partly subject to artificial regulation by a dam on Heffley lake.

Discharge Measurements.—Stream is well rated by well-distributed meterings.

Winter Flow.—Stream usually frozen over during winter months.

Accuracy.—High. Results computed from a well-rated curve.

DISCHARGE MEASUREMENTS of HEFFLEY Creek (Lower) at mouth, for 1914.

Date	Hydrographer.	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet	Sec. ft.
June 1	C. B. Corbould	1915	10	5·75	1·30	1·20	7·5
" 29	"	1915	8	5·50	1·21	1·10	6·7
Aug. 14	"	1915	8	5·70	1·21	1·15	6·9
Sept. 8	E. H. Tredcroft and C. B. Corbould	1923	7·0	2·50	0·30	0·80	0·8
Oct. 29	C. B. Corbould	1673	7·5	4·00	0·57	1·00	2·6

For further measurements during 1914 on this stream see Heffley Creek Upper Station, and for further hydrographic data see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Hetiney Creek (Lower) near mouth, for 1914.

DAY.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft
1	1·05	4·3	1·50	18·4	1·20	8·1
2	1·05	4·3	1·50	18·4	1·17	7·3
3	1·05	4·3	1·75	31·7	1·12	5·9
4	1·10	5·4	1·75	31·7	1·12	5·9
5	1·20	8·1	1·65	25·6	1·12	5·9
6	1·20	8·1	1·60	23·3	1·10	5·4
7	1·20	8·1	1·60	23·3	1·20	8·1
8	1·20	8·1	1·57	21·8	1·25	9·5
9	1·15	6·7	1·57	21·8	1·30	11·0
10	1·15	6·7	1·75	31·7	1·37	13·3
11	1·12	5·9	1·75	31·7	1·37	13·3
12	1·15	6·7	1·80	35·5	1·35	12·6
13	1·20	8·1	1·90	42·6	1·35	12·6
14	1·20	8·1	1·90	42·6	1·35	12·6
15	1·22	8·7	2·00	50·3	1·32	11·6
16	1·35	12·6	2·00	50·3	1·32	11·6
17	1·50	18·4	2·05	54·5	1·30	11·0
18	1·50	18·4	2·05	54·5	1·25	9·5
19	1·50	18·4	2·00	50·3	1·25	9·5
20	1·50	18·4	1·90	42·6	1·15	6·7
21	1·47	17·2	1·85	39·1	1·05	4·3
22	1·40	14·3	1·80	35·5	1·05	4·3
23	1·40	14·3	1·70	27·9	1·07	4·7
24	1·40	14·3	1·55	20·8	1·10	5·4
25	1·40	14·3	1·40	14·3	1·15	6·7
26	1·40	14·3	1·35	12·6	1·20	8·1
27	1·40	14·3	1·35	12·6	1·20	8·1
28	1·40	14·3	1·30	11·0	1·15	6·7
29	1·40	14·3	1·30	11·0	1·15	6·7
30	1·40	14·3	1·30	11·0	1·10	5·4
31	....	..	1·30	11·0	....	

DAILY GAUGE HEIGHT AND DISCHARGE of Heffley Creek (Lower) at mouth, for 1914.—*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft.
1	1·07	4·7	1·20	8·1	0·77	0·7	0·95	2·5	1·00	3·2	1·05	4·3
2	1·05	4·3	1·30	11·0	0·80	0·8	0·95	2·5	1·00	3·2	1·05	4·3
3	1·05	4·3	1·30	11·0	0·80	0·8	0·95	2·5	1·00	3·2	1·07	4·7
4	1·05	4·3	1·30	11·0	0·80	0·8	0·95	2·5	1·00	3·2	1·07	4·7
5	1·02	3·6	1·30	11·0	0·80	0·8	0·95	2·5	1·00	3·2	1·07	4·7
6	1·00	3·2	1·30	11·0	0·80	0·8	0·95	2·5	1·00	3·2	1·07	4·7
7	1·00	3·2	1·30	11·0	0·80	0·8	0·95	2·5	0·90	1·7	......	.
8	1·02	3·6	1·20	8·1	0·80	0·8	0·95	2·5	1·00	3·2	.	. .
9	1·00	3·2	1·30	11·0	0·80	0·8	0·95	2·5	1·00	3·2	. ...	.
10	1·00	3·2	1·30	11·0	0·80	0·8	0·95	2·5	1·00	3·2	......	
11	1·00	3·2	1·30	11·0	0·80	0·8	0·95	2·5	1·00	3·2	. .	.
12	1·00	3·2	1·25	9·5	0·80	0·8	0·95	2·5	0·97	2·7	. . .	.
13	0·97	2·7	1·20	8·1	0·80	0·8	0·95	2·5	0·97	2·7	. .	. . .
14	0·97	2·7	1·15	6·7	0·85	1·3	0·95	2·5	0·97	2·7		.
15	0·97	2·7	1·15	6·7	0·90	1·7	0·97	2·7	0·97	2·7	. .	.
16	0·95	2·5	1·10	8·1	0·90	1·7	0·97	2·7	0·97	2·7	. .	. .
17	0·95	2·5	1·05	4·3	0·90	1·7	0·97	2·7	1·00	3·2	. . .	.
18	0·95	2·5	1·02	3·6	0·90	1·7	0·97	2·7	1·02	3·6	.	. .
19	0·90	1·7	1·00	3·2	0·90	1·7	0·97	2·7	1·02	3·6		. .
20	0·90	1·7	0·95	2·5	0·95	2·5	0·97	2·7	1·07	4·7	. . .	. . .
21	1·07	4·7	0·90	1·7	0·95	2·5	0·97	2·7	1·00	3·2	. .	.
22	1·10	5·4	0·87	1·5	0·92	2·0	1·00	3·2	1·00	3·2	. ...	. .
23	1·10	5·4	0·80	0·8	0·92	2·0	1·00	3·2	1·02	3·6	.	. . .
24	1·15	6·7	0·80	0·8	0·92	2·0	1·00	3·2	1·07	4·7	. . ..	. . .
25	1·30	11·0	0·80	0·8	0·92	2·0	1·00	3·2	1·07	4·7	.....	. ...
26	1·30	11·0	0·80	0·8	0·95	2·5	1·00	3·2	1·05	4·3	. .	.
27	1·27	10·1	0·82	0·9	0·95	2·5	1·00	3·2	1·07	4·7	. .	.
28	1·27	10·1	0·80	0·8	0·95	2·5	1·00	3·2	1·07	4·7	......	.
29	1·25	9·5	0·80	0·8	0·95	2·5	1·60	3·2	1·00	4·7	....	.. ...
30	1·25	9·5	0·80	0·8	0·95	2·5	1·00	3·2	1·00	3·2	....	....
31	1·20	8·1	0·77	0·7	....	.....	1·00	3·2	. . .	. ...	......	.. ..

MONTHLY DISCHARGE of Heffley Creek (Lower) near mouth, for 1914.

(Drainage area, 65 square miles.)

Month.	Discharge in Second Feet.		
	Maximum.	Minimum.	Mean.
April	18·4	4·3	11·1
May	54·5	11·0	29·3
June	13·3	4·3	8·4
July	11·0	1·7	5·0
August	11·0	0·7	5·7
September	2·5	6·7	1·5
October	3·2	2·5	2·8
November	4·7	1·7	3·4
December	4·7	4·3	....
The period	54·5	0·7	8·4

NOTE.—The flow of Heffley creek at mouth is not the natural discharge, since several large diversions are made above this point, and the run-off is regulated; also by a dam on Heffley lake.

Precipitation is low, varying probably from 10 to 15 inches per annum. There is probably some evaporation loss from Heffley lakes.

INGRAM CREEK (2020).

Location.—Section 23, township 17, range 13, west 6th meridian.

Records Available.—April 1 to October 4, 1911; April 1 to August 31, 1912; April 1 to September 16, 1913.

Drainage Area.—Twenty-five square miles.

Gauge.—The gauge is a vertical staff gauge read daily by Miss M. King during high water, and tri-weekly at low stages.

Channel.—Channel is straight at measuring section. Bed of stream is rocky and permanent, only one channel at all stages.

Discharge Measurements.—The curve is well defined, measurements having been taken at all stages.

Winter Flow.—Ice conditions usually exist during December, January and February.

Accuracy.—The general accuracy of results is considered high.

DISCHARGE MEASUREMENTS of Ingram Creek near Grand Prairie, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft
May 6	E. M. Dann & E. H. Tredcroft	1055	18	13·95	3·14	1·92	43·9
June 23	C. B. Corbould	1915	17	7·10	1·70	1·25	12·2
July 23	do	1915	8	4·90	0·65	1·00	3·2
Sept. 24	do	1915	7	2·80	0·40	0·88	1·1

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Ingram Creek near Grand Prairie, for 1914.

Day.	May.		June.	
	Gauge Height.	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	...	...	1·50	22·0
2	...	...	1·40	17·75
3	....	....	1·50	22·0
4		.	1·40	17·75
5		.	1·40	17·75
6	1·92	43·9	1·50	22·0
7	....	...	1·40	17·75
8			1·40	17·75
9	2·20	61·2	1·35	15·[illegible]
10	2·40	74·4	1·35	15·[illegible]
11	2·30	67·6	1·40	17·75
12	2·40	74·4	1·40	17·75
13	2·30	67·6	1·30	13·75
14	2·20	61·2	1·30	13·75
15	2·40	74·4	1·25	11·8
16	2·50	81·1	1·20	9·8
17	2·45	77·7	1·20	9·8
18	2·30	67·6	2·20	9·8
19	2·10	54·7	1·20	9·8
20	2·00	48·5	1·20	9·8
21	1·90	42·5	1·20	9·8
22	1·90	42·5	1·15	8·1
23	1·90	42·5	1·20	9·8
24	1·90	42·5	1·20	9·8
25	1·90	42·5	1·20	9·8
26	1·80	36·8	1·20	9·8
27	1·80	36·8	1·20	9·8
28	1·70	31·5	1·15	8·1
29	1·65	29·0	1·10	6·4
30	1·60	26·5	1·[illegible]	3·4
31	1·55	24·2	...	....

DAILY GAUGE HEIGHT AND DISCHARGE of Ingram Creek near Grand Prairie, for 1914—*Con.*

Day.	July.		August.		September.		October.		November	
	Gauge Height.	Dis-charge	Gauge Height	Dir charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Di-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec
1	1·10	6·4	0·80	0·70	.....	1·1	....	2·6	0·55	0·20
2	1·05	5·0	.....	0·9	0·85	1·1		3·8		0·20
3	1·05	5·0	....	1·1	..	0·95	1·05	5·0		0·20
4	1·05	5·0		1·3		0·80	1·00	3·5	0·55	0·20
5	1·00	3·5	0·90	1·5	0·80	0·70	......	3·2	......	0·21
6	1·00	3·5		1·3	0·80	0·70		2·8		0·23
7	1·00	3·5		1·3		1·30	0·95	2·5	0·60	0·25
8	1·05	5·0	0·85	1·1		1·90		2·2	0·50	0·1
9	1·05	5·0	0·80	0·7	0·95	2·50		1·9		0·17
10	1·00	3·5	...	0·7	....	2·80	0·9	1·5	...	0·19
11	1·05	5·0		0·7		3·1	0·9	1·5	0·55	0·20
12	1·10	6·4	0·80	0·7	1·0	3·5		2·6		
13	1·25	11·8	....	1·0	1·0	3·5		3·8		
14	1·30	13·7		1·2		4·4	1·05	5·0		
15	1·00	3·5	0·90	1·5	...	5·4	.....	3·8		
16	1·00	3·5	0·75	0·55	1·1	6·4		2·6		
17	1·05	5·0	0·75	0·55		7·0		1·4		
18	1·00	3·5		0·55		7·5	0·60	0·25		
19	1·00	3·5	0·75	0·55	1·15	8·1		0·23		
20	1·25	11·8		0·75	1·00	3·5		0·21		
21	1·10	6·4		0·95		2·8	0·55	0·20		
22	1·00	3·5	0·85	1·10		2·0		0·19		
23	1·00	3·5		0·90	0·90	1·5		0·17		
24	1·00	3·5	0·80	0·70	..	2·75	0·50	0·15		
25	1·00	3·5		0·70	...	3·90	0·55	0·[illegible]		
26	0·95	2·5	0·80	0·70	1·05	5·00	.....	0·20		
27	0·95	2·5	...	0·80	1·05	5·0	....	0·20		
28	0·90	1·5		0·9	.....	3·9	...	0·20		
29	0·90	1·5	0·85	1·1		2·7		0·20		
30	0·90	1·5	0·85	1·1	0·90	1·5		0·20		
31	0·85	1·1		1·1		..	0·55	0·20		

MONTHLY DISCHARGE of Ingram Creek near Grand Prairie, for 1914.

(Drainage area, 25 square miles.)

Month	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage [illegible]	To in acre
May	81·1	24·2	52·1	2·08	2·40	
June	22·0	6·4	13·2	0·53	0·59	
July	13·7	1·1	4·6	0·18	0·21	
August	1·5	0·55	0·92	0·04	0·05	
September	8·1	0·7	3·2	0·13	0·14	
October	5·0	0·15	1·7	0·07	0·08	
November	0·25	0·20	(for period	November	1 to November 11	
December	..					
The period	81·1	0·15	12·6	0·50	3·47	

NOTE.—Creek became frozen up on November 12, when water ceased running. No precipitation records available

JAMIESON CREEK (2022).

Location.—Section 21, township 22, range 17, west of the 6th meridian.

Records Available.—June 22 to October 30, 1911; April 3 to October 30, 1912; May 1 to October 1, 1913; January 1 to January 24, and April 1 to December 9, 1914.

Drainage Area.—Sixty-six square miles.

Gauge.—Vertical staff gauge situated above British Columbia Fruitlands Diversion, and read daily by J. Crack, rancher.

Channel.—Is approximately 30 feet in width, with rocky bed.

Discharge Measurements.—Are made from Highway bridge at high water and by wading at low water.

Accuracy.—The accuracy of the returns are considered fairly high, having been compiled from a well-defined curve; meterings have been procured at all stages.

Winter Flow.—Ice conditions on this stream vary considerably. Some years obtaining for two months (January and February) and some years remaining open.

DISCHARGE MEASUREMENTS of Jamieson Creek near Black Pines, for 1914.

Date.		Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
				Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May	10	E. H. Tredcroft	1055	28	63·3	7·50	3·80	490[1]
"	25	E. H. Tredcroft & C. Corbould	1923	30	54·1	5·61	3·50	343[1]
June	30	E. H. Tredcroft	1923	35	34·0	1·90	2·36	65·5
Aug	5	C. B. Corbould	1915	24	39·6	0·60	2·00	26·0
"	26	E. H. Tredcroft & C. B. Corbould	1923	20	18·4	0·46	1·81	8·6

[1] Measurements made at highway bridge and added to flow of div.

For further hydrographic data see Water Resources Papers Nos. 1 and 8

DAILY GAUGE HEIGHT AND DISCHARGE of Jamieson Creek near Black Pine, for 1914.

Day.	January.		February.		March.		April.		May.		June	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·90	13·0					2·00	20	3·30	251	3·00	172
2	1·90	13·0					2·00	20	3·60	375	2·90	150
3	1·80	8·0					2·00	20	3·90	570	2·90	150
4	1·70	4·5					2·00	20	3·60	375	2·80	130
5	1·60	3·0					2·10	29	3·60	375	2·60	97
6	1·55	2·2					2·10	29	3·50	325	2·60	97
7	1·55	2·2					2·20	40	3·45	305	2·65	104
8	1·45	1·0					2·30	53	3·45	305	2·60	97
9	1·45	1·0					2·40	67	3·60	375	2·55	89
10	1·40	0·5					2·40	67	3·80	500	2·55	89
11	1·40	0·5					2·45	74	4·10	730	2·55	89
12	1·40	0·5					2·45	74	4·20	810	2·45	74
13	1·40	0·5					2·50	82	4·25	852	2·45	74
14	1·45	1·0					2·50	82	4·30	895	2·45	74
15	1·45	1·0					2·60	97	4·40	980	2·40	67
16	1·45	1·0					2·75	121	4·60	1,155	2·35	60
17	1·45	1·0					2·80	130	4·40	980	2·40	67
18	1·45	1·0					2·90	150	4·25	852	2·35	60
19	1·45	1·0					2·80	130	3·80	500	2·20	40
20	1·40	0·5					2·75	121	3·90	570	2·20	40
21	1·40	0·5					2·75	121	3·80	500	2·20	40
22	1·40	0·5					2·75	121	3·80	500	2·30	53
23	1·40	0·5					2·75	121	3·70	432	2·40	67
24	1·40	0·5					2·75	121	3·70	432	2·45	74
25	1·40	0·5					2·75	121	3·50	325	2·50	82
26							2·80	130	3·40	285	2·55	89
27							2·85	140	3·40	285	2·60	97
28							2·90	150	3·30	251	2·65	104
29							2·95	161	3·20	222	2·60	97
30							3·20	222	3·10	196	2·50	82
31									3·00	172		

DAILY GAUGE HEIGHT AND DISCHARGE of Jamieson Creek near Black Pines, for 1914—*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.
1	2·35	60	1·95	16	1·72	4·5	1·77	6·0	1·87	10·5	1·77	6·0
2	2·35	60	1·95	16	1·67	3·7	1·77	6·0	1·92	13·0	1·82	8·0
3	2·30	53	1·95	16	1·67	3·7	1·77	6·0	1·92	13·0	1·82	8·0
4	2·30	53	1·95	16	1·67	3·7	1·77	6·0	1·92	13·0	1·82	8·0
5	2·25	46	1·95	16	1·67	3·7	1·77	6·0	1·87	10·5	1·87	10·5
6	2·20	40	1·95	16	1·67	3·7	1·77	6·0	1·87	10·5	1·92	13·0
7	2·20	40	1·95	16	1·67	3·7	1·77	6·0	1·87	10·5	1·92	13·0
8	2·15	34	1·95	16	1·72	4·5	1·77	6·0	1·87	10·5	1·87	10·5
9	2·10	29	1·95	16	1·77	6·0	1·72	4·5	1·82	8·0	1·87	10·5
10	2·10	29	1·90	13	1·87	10·5	1·72	4·5	1·82	8·0	......	...
11	2·05	24	1·90	13	1·77	6·0	1·77	6·0	1·82	8·0	....	..
12	2·05	24	1·90	13	1·72	4·5	1·82	8·0	1·87	10·5		
13	1·95	16	1·85	10	1·72	4·5	1·87	10·5	1·92	13·0		
14	2·10	29	1·85	10	1·77	6·0	1·82	8·0	1·97	16·0		
15	2·40	67	1·90	13	1·82	8·0	1·77	6·0	1·97	16·0		
16	2·40	67	1·90	13	1·77	6·0	1·77	6·0	1·92	13·0		
17	2·30	53	1·90	13	1·82	8·0	1·77	6·0	1·87	10·5		
18	2·25	46	1·85	10	1·87	10·5	1·82	8·0	1·82	8·0		
19	2·20	40	1·85	10	1·87	10·5	1·87	10·5	1·87	10·5		
20	2·20	40	1·85	10	1·87	10·5	1·97	16·0	1·82	8·0		
21	2·10	29	1·85	10	1·87	10·5	1·92	13·0	1·82	8·0		
22	2·20	40	1·85	10	1·87	10·5	1·92	13·0	1·82	8·0		
23	2·30	53	1 85	10	2·07	24·0	1·87	10·5	1·82	8·0		
24	2·40	67	1·85	10	1·92	13·0	1·87	10·5	1·82	8·0		
25	2·40	67	1·75	6	1·87	10·5	1·87	10·5	1·87	10·5		
26	2·30	53	1·80	8	1·87	10·5	1·82	8·0	1·87	10·5		
27	2·20	40	1·75	6	1·82	8·0	1 82	8·0	1·82	8·0		
28	2·05	25	1·75	6	1·82	8·0	1·82	8·0	1·82	8·0		
29	2·05	25	1·80	8	1·77	6·0	1·82	8·0	1·77	6·0		
30	1·95	16	1·75	6	1·77	6·0	1·82	8·0	1·77	6·0		
31	1·90	13	1·75	6	....	...	1·82	8·0	....	....	....	....

MONTHLY DISCHARGE of Jamieson Creek near Black Pines, for 1914.

(Drainage area, 66 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.
A	222	20	94	1·4	1·6	5,593
M	1,155	172	506	7·7	8·9	31,113
J	172	40	87	1·3	1·4	5,176
J	67	13	41	6·6	0·7	2,521
A	16	6	11	0·2	0·3	676
S ber	24	3·7	7	0·1	0·1	416
O er	16	4·5	8	0·1	0·1	492
N ber	16	6·0	10	0·2	0·2	595
T riod	1,155	3·7	95	1·45	13·3	46,582

TE —Summary given under "the period" covers only the months of April to November inclusive.

ipitation probably varies from about 10 inches at the mouth to 30 inches in the higher altitudes.

LOUIS CREEK (2023).

Location.—Section 33, township 23, range 15, west 6th meridian.

Records Available.—July 16 to October 31, 1911; April 1 to November 16, 1912; May 1 to October 14, 1913; April 1 to December 11, 1914.

Drainage Area.—One hundred square miles.

Gauge.—Standard vertical staff gauge read daily during high water, and tri-weekly during low water, by D. G. McKnight.

Channel.—The width of stream averages 25 to 35 feet at measuring section. Control is good.

Discharge Measurements.—Nine well-distributed meterings have been taken on this stream, and curve is well defined.

Winter Flow.—Ice conditions obtain on this stream usually throughout January, February and March.

Accuracy.—Accuracy of returns on the whole is high, and results should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Louis Creek at Leslie's Ranch, for 1914.

Date	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec. ft.
Aug. 13	C. B. Corbould...	1,915	21·0	27·3	1·0	0·59	[illegible]

For further hydrographic data see Water Resources Papers Nos. 1 and 8

DAILY GAUGE HEIGHT AND DISCHARGE of Louis Creek at Leslie's Ranch, for 1914.

DAY.	April		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1·45	89	2·50	[illegible]
2	0·55	26	1·80	130	2·80	278
3			2·05	165	3·10	[illegible]
4	0·55	26	1·90	144	2·90	294
5		..	1·80	130	2·60	246
6	0·65	30	1·75	123	2·40	215
7		....	1·70	117	2·45	222
8		...	1·75	123	2·35	207
9			1·90	144	2·30	200
10	0·75	35	2·20	186	2·55	238
11			2·30	200	2·90	294
12			2·45	222	2·95	302
13	0·85	40	2·50	230	2·80	278
14			3·10	326	2·80	278
15			3·55	398	2·85	286
16			3·55	398	2·90	294
17	1·10	57	3·30	358	2·90	294
18			3·05	318	2·70	262
19			2·90	294	2·50	230
20	1·05	53	2·75	270	2·50	230
21			2·75	270	2·10	172
22			2·85	286	1·95	151
23			3·00	310	2·05	165
24	1·10	57	3·20	342	2·00	158
25			3·15	334	2·15	179
26			2·85	286	2·05	165
27	1·15	61	2·60	246	1·95	151
28			2·40	215	1·85	137
29			2·30	200	2·05	165
30			2·20	186	1·80	130
31	..		2·30	200		...

DAILY GAUGE HEIGHT AND DISCHARGE of Louis Creek at Leslie's Ranch, for 1914.—*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·70	117										
2	1·60	105										
3	1·50	94					0·55	26	0·70	33		
4	1·45	89	0·60	28								
5	1·30	74			0·45	22					0·50	24
6	1·25	60					0·50	[illegible]				
7									0·60	28		
8			0·60	28	0·40	20						
9											0·50	24
10	1·05	53	0·65	30			0·50	24	0·55	26		
11												
12					0·50	24					0·50	24
13	0·90	43					0·50	24				
14									0·55	26		
15	1·40	84	0·55	26	0·50	24						
16												
17	1·10	57	0·55	26			0·50	24	0·55	26		
18												
19					0·55	26						
20							0·60	28				
21			0·50	24								
22	0·90	43			0·55	26			0·50	24		
23												
24			0·50	24			0·55	26				
25	0·80	37			0·50	24			0·50	24		
26												
27							0·50	24				
28			0·45	22								
29	0·70	32			0·60	28			0·50	24		
30							0·50	24	0·50	24		
31	0·65	30	0·45	22								

MONTHLY DISCHARGE of Louis Creek near mouth, for 1914.

(Drainage area, 100 square miles.)

Month.	Discharge in Second-Feet.				Run-Off
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.
April	61	26	43·0	0·4	0·4
May	398	89	233·0	2·3	2·6
June	326	130	225·9	2·2	2·4
July	117	30	66·2	0·7	0·8
August	30	22	25·5	0·2	0·2
September	28	20	24·2	0·2	0·2
October	28	24	24·9	0·2	0·2
November	32	24	26·0	0·3	0·3
December					
The period	398	20	83·6	0·8	7·1

NOTE.—No precipitation data available, but it is probable that it has an annual variation from 15 to 20 inch conditions existed subsequent to December 11.

MONTE CREEK, DIV. TO SUMMIT LAKE (2026).

Location.—At Graham's ranch.

Records Available.—May 25 to October 2, 1911; June 20 to September 30, 1913; April 1 to November 17, 1914.

Gauge.—Vertical staff gauge read daily by E. C. Lewis.

Channel.—About 10 feet in width, with gravelly bed. This diversion supplements the natural run-off of Summit lake (or Essell creek).

Discharge Measurements.—Gauge height discharge curve, only fairly well defined by three meterings in 1914.

Winter Flow.—Stream frozen up during the winter months.

Accuracy.—Fairly good, within about 10 per cent of true accuracy.

DISCHARGE MEASUREMENTS of Monte Creek Diversion to Summit Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section	Mean Velocity.	Gauge Height	Discharge
			Feet.	Sq. ft	Ft. per sec	Feet	Sec.-ft
May 7	E. M. Dann & E. H. Tredcroft	1,055	9·0	7·35	3·15	1·19	24·7
June 22	C. B. Corbould	1,915	8·0	5·00	2·24	1·00	11·2[1]
July 22	do	1,915	3·5	0·90	0·63	0·20	0·6
Sept 23	do					0·10	0·2[2]

[1] New gauge installed on this date. Old gauge reading 0·65.

[2] Estimated

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek Diversion to Summit Lake, for 1914.

Up to June 22nd old gauge used.

Day	April		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft
1	0·55	3·1	1·20	25·1	...	[illegible]
2	0·55	3·1	1·40	35·9		[illegible]
3	[illegible]62	4·3	1·50	41·6		[illegible]
4	[illegible]	6·5	1·40	35·9		[illegible]
5		8·7	1·30	30·4		[illegible]
6		12·7	1·30	30·4		[illegible]
7	[illegible]	15·9	1·20	25·1		[illegible]
8		20·1	1·20	25·1		[illegible]
9		27·7	1·30	30·4		[illegible]
10		30·4	1·40	35·9		[illegible]
11	[illegible]	33·1	1·40	35·9		[illegible]
12	[illegible]	35·9	1·30	30·4		[illegible]
13	[illegible]	38·7	1·10	20·1		[illegible]
14	[illegible]	41·6	1·20	25·1		[illegible]
15	[illegible]	41·6	1·20	25·1		[illegible]
16	1·50	41·6	1·00	15·9		[illegible]
17	1·50	41·[illegible]	0·90	12·0		[illegible]
18	1·50	41·6	0·90	12·0		[illegible]
19	1·50	41·6	0·90	12·0		[illegible]
20	1·50	41·6		11·0		[illegible]
21	1·50	41·6	...	11·0		[illegible]
22	1·50	41·6	..	11·0	1·00	[illegible]
23	1·50	41·[illegible]	..	11·0	1·00	[illegible]
24	1·40	35·9	.. ..	11·0	1·05	[illegible]
25	1·40	35·9	.. ....	11·0	1·10	[illegible]
26	1·30	30·4	..	11·0	1·05	[illegible]
27	1·20	25·1	..	11·0	1·00	[illegible]
28	1·20	25·1		11·0	1·00	[illegible]
29	1·20	25·1		11·0	1·00	[illegible]
30	1·20	25·1		11·0	1·00	[illegible]
31			.	11·0		

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek River Div. to Summit Lake, for 1914—*Con.*

Day	July.		August.		September		[illegible]		November	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	[illegible] Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·90	8·8	0·20	0·7	0·05	0·1	0·1	0·3	0·3	1·2
2	0·90	8·8	0·20	0·7	0·05	0·1	0·1	0·3	0·3	1·2
3	0·90	8·8	0·20	0·7	0·05	0·1	0·1	0·3	0·3	1·2
4	0·80	6·8	0·20	0·7	0·05	0·1	0·1	0·3	0·3	1·2
5	0·80	6·8	0·20	0·7	0·05	0·1	0·1	0·3	0·3	1·2
6	0·80	6·8	0·20	0·7	0·05	0·1	0·1	0·3	0·3	1·2
7	[illegible]	6·8	0·20	0·7	0·05	0·1	0·1	0·3	0·3	1·2
8	0·70	5·2	0·20	0·7	0·05	0·1	0·1	0·3	0·3	1·2
9	0·70	5·2	0·20	0·7	0·05	0·1	0·15	0·5	0·3	1·2
10	0·70	5·2	0·10	0·3	0·05	0·1	0·2	0·7	0·3	1·2
11	0·60	3·9	0·10	0·3	0·05	0·1	0·2	0·7	0·3	1·2
12	0·50	2·8	0·10	0·3	0·05	0·1	0·2	0·7	0·3	1·2
13	0·30	1·2	0·10	0·3	0·05	0·1	0·2	0·7	0·2	0·7
14	0·30	1·2	0·10	0·3	0·05	0·1	0·2	0·7	0·2	0·7
15	0·20	0·7	0·10	0·3	0·05	0·1	0·2	0·7	0·2	0·7
16	0·20	0·7	0·10	0·3	0·10	0·3	0·2	0·7	0·2	0·7
17	0·20	0·7	0·10	0·3	0·10	0·3	0·2	0·7	0·3	1·2
18	0·20	0·7	0·10	0·3	0·10	0·3	0·2	0·7		
19	0·20	0·7	0·10	0·3	0·22	0·8	0·2	0·7		
20	0·20	0·7	0·10	0·3	0·20	0·7	0·3	1·2		
21	0·30	1·2	0·10	0·3	0·20	0·7	0·3	1·2		
22	0·20	0·7	0·10	0·3	0·10	0·3	0·3	1·2		
23	0·20	0·7	0·10	0·3	0·10	0·3	0·5	2·8		
24	0·20	0·7	0·10	0·3	0·10	0·3	0·2	0·7		
25	0·20	0·7	0·10	0·3	0·10	0·3	0·2	0·7		
26	0·20	0·7	0·10	0·3	0·10	0·3	0·2	0·7	......	......
27	0·20	0·7	0·10	0·3	0·10	0·3	0·2	0·7		
28	0·20	0·7	0·10	0·3	0·10	0·3	0·3	1·2		
29	0·20	0·7	0·10	0·3	0·10	0·3	0·3	1·2		
30	0·20	0·7	0·10	0·3	0·10	0·3	0·3	1·2		
1	0·20	0·7	0·10	0·3	...		0·3	1·2		

MONTHLY DISCHARGE of Monte Creek Div. to Summit Lake, for 1914.

(Drainage area, — square miles.)

Month.	Discharge in Second-Feet.			Run-off.
	[illegible]aximum.	Minimum.	Mean.	Total in acre-feet.
[illegible]	41·6	3·1	28·6	1,702
[illegible]	41·6	11·0	20·5	1,260
[illegible]	13·7	11·0	11·2	666
[illegible]	8·8	0·7	2·9	178
[illegible]	6·7	0·3	0·4	25
S[illegible]mber	0·8	0·1	0·2	12
[illegible]ber	2·8	0·3	0·7	43
[illegible]ember	1·2	0·7	For period Nov. 16.	Nov. 1 to
[illegible]period	41·6	0·1	0·2	3,886

NOTE.—This diversion carries Monte Creek water to Summit lake, where it is stored being used, when needed, upon [illegible] in the Salmon river valley, near Grand Prairie.

MONTE CREEK, BELOW DIV. TO SUMMIT LAKE (2025).

Location.—Section 22, township 13, range 14, west 6th meridian.

Records Available.—May 25 to September 30, 1911; April 1 to September 17, 1912; June 20 to September 30, 1913; April 1 to November 17, 1914.

Drainage Area.—Forty-five square miles.

Gauge.—Standard vertical gauge read daily by E. C. Lewis.

Channel.—Width of channel averages 10 feet. Bed of stream gravelly and permanent.

Discharge Measurements.—The curve is well defined, with measurements taken at varying stages.

Winter Flow.—Ice conditions generally prevail throughout winter months.

Accuracy.—Accuracy on the whole is fairly high, and is probably within 10 per cent.

DISCHARGE MEASUREMENTS of Monte Creek below Summit Lake Div.. for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft
June 22	C. B. Corbould	1915	13	8·7	0·54	4·00	4·7
July 22	do	1915	12	7·5	0·41	3·93	3·11
Sept. 23	do	1915	11	5·8	0·15	3·83	0·90

For further hydrographic data see Water Resources Paper Nos. 1 and 8

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek below Div. Summit Lake, for 1914.

Day.	April.		May		June.	
	Gauge Height	Discharge	Gauge Height.	Discharge.	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3·8	1·9	4·6	59·0	4·3	20·7
2	3·82	2·0	4·7	73·3	4·3	20·7
3	3·9	2·7	4·8	90·4	4·3	20·7
4	3·97	4·1	4·6	59·0	4·3	20·7
5	4·05	6·4	4·7	73·3	4·3	20·7
6	4·1	8·0	4·6	59·0	4·25	16·8
7	4·1	8·0	4·5	44·5	4·2	13·0
8	4·12	9·0	4·5	44·5	4·2	13·0
9	4·1	8·0	4·7	73·3	4·2	13·0
10	4·12	9·00	4·9	107·4	4·3	20·7
11	4·2	13·0	5·0	125·5	4·3	20·7
12	4·2	13·0	5·0	125·5	4·4	31·5
13	4·3	20·7	4·7	73·3	4·35	26·0
14	4·25	16·8	4·6	59·0	4·3	20·7
15	4·2	13·0	4·7	73·3	4·3	20·7
16	4·2	13·0	4·85	98·5	4·3	20·7
17	4·1	8·0	4·8	90·4	4·2	13·0
18	4·07	6·9	4·7	73·3	4·2	13·0
19	4·0	4·7	4·6	59·0	4·2	13·0
20	4·1	8·0	4·6	59·0	4·15	10·5
21	4·1	8·0	4·55	51·7	4·1	8·0
22	4·02	5·5	4·50	44·5	4·05	6·4
23	4·0	4·8	4·5	44·5	4·0	4·7
24	4·0	4·8	4·5	44·5	4·0	4·7
25	4·0	4·8	4·47	40·5	4·1	8·0
26	4·1	8·0	4·4	31·5	40·5	6·4
27	4·2	13·0	4·4	31·5	4·0	4·7
28	4·2	13·0	4·4	31·5	3·9	2·7
29	4·35	26·0	4·4	31·5	4·0	4·7
30	4·5	44·5	4·35	26·0	4·0	4·7
31			4·3	20·7		

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek below Div. to Summit Lake, for 1914—*Con.*

Day	July.		August.		September.		October.		November	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	4·0	4·7	3·8	1·9	3·7	1·5	3·9	2·7	4·1	[illegible]
2	4·0	4·7	3·8	1·9	3·7	1·5	3·9	2·7	4·9	[illegible]
3	4·0	4·7	3·8	1·9	3·7	1·5	3·9	2·7	4·0	[illegible]
4	4·0	4·7	3·8	1·9	3·7	1·5	3·9	2·7	4·0	[illegible]
5	4·0	4·7	3·8	1·9	3·7	1·5	3·9	2·7	4·0	[illegible]
6	3·9	2·7	3·8	1·9	3·7	1·5	3·9	2·7	4·0	[illegible]
7	3·9	2·7	3·8	1·9	3·8	1·9	3·9	2·7	4·0	[illegible]
8	4·0	4·7	3·8	1·9	3·8	1·9	3·9	2·7	4·0	[illegible]
9	4·0	4·7	3·8	1·9	3·8	1·9	4·0	4·7	4·0	[illegible]
10	4·0	4·7	3·7	1·5	3·8	1·9	4·0	4·7	4·0	[illegible]
11	3·9	2·7	3·7	1·5	3·9	2·7	4·0	4·7	4·0	[illegible]
12	3·85	2·3	3·7	1·5	3·9	2·7	4·0	4·7	3·9	[illegible]
13	3·8	1·9	3·8	1·9	3·9	2·7	4·0	4·7	3·9	[illegible]
14	4·0	4·7	3·8	1·9	3·9	2·7	4·0	4·7	3·95	[illegible]
15	4·0	4·7	3·8	1·9	3·9	2·7	4·0	4·7	4·0	[illegible]
16	4·0	4·7	3·8	1·9	3·9	2·7	4·05	6·4		
17	4·0	4·7	3·8	1·9	3·9	2·7	4·1	8·0		
18	3·9	2·7	3·7	1·5	3·9	2·7	4·0	4·7		
19	3·9	2·7	3·7	1·5	3·9	2·7	4·0	4·7		
20	4·0	4·7	3·7	1·5	3·9	2·7	4·0	4·7		
21	3·95	3·7	3·7	1·5	3·8	1·9	4·0	4·7		
22	3·9	2·7	3·7	1·5	3·8	1·9	3·9	2·7		
23	3·9	2·7	3·8	1·9	3·8	1·9	3·85	2·3		
24	3·9	2·7	3·75	1·7	3·8	1·9	4·0	4·7		
25	3·9	2·7	3·7	1·5	3·8	1·9	4·1	8·0		
	3·9	2·7	3·7	1·5	3·8	1·9	4·1	8·0		
27	3·9	2·7	3·7	1·5	3·8	1·9	4·05	6·4		
28	3·9	2·7	3·7	1·5	3·8	1·9	4·0	4·7		
29	3·9	2·7	3·7	1·5	3·8	1·9	4·0	4·7		
30	3·9	2·7	3·7	1·5	3·8	1·9	4·1	8·0		
31	3·8	1·9	3·7	1·5			4·1	8·0		

MONTHLY DISCHARGE of Monte Creek below Summit Lake Div., for 1914

Drainage area, 45 square miles

Month	Discharge in Second-Feet		
	Maximum	Minimum	Mean
April			
May	44·5	1·9	[illegible]
June	125·5	26·7	[illegible]
July	31·5	2·7	[illegible]
August	4·7	1·9	
September	1·9	1·5	[illegible]
October	2·7	1·5	[illegible]
November	8·0	2·3	[illegible]
December	8·0	2·7	
The year			
	125·5	1·5	[illegible]

NOTE.—The run-off is not a function of the drainage area since a large diversion is made above this station which water to Summit lake. During April to November, 1914, 3,886 acre-feet were so diverted.

Rainfall probably varies to a maximum of 20 inches annually.

MONTE CREEK, ABOVE BOSTOCK'S DIVERSION (2024).

Location.—Section 25, township 19, range 15, west 6th meridian.

Records Available.—May 20 to June 30, 1911; August 8, 1911; April 8 to September 7, 1912; April 16 to September 13, 1913; April 1 to December 4, 1914.

Drainage Area.—One hundred and ten square miles.

Gauge.—Standard vertical gauge read semi-weekly by T. F. Teagle.

Channel.—About 15 feet wide, with rocky bed. Flow varies from zero to about 100 cubic feet per second.

Discharge Measurements.—Gauge-height discharge curve is very well defined.

Winter Flow.—Ice conditions prevail during December, January and February.

Accuracy.—High. Results computed from a well-rated curve.

DISCHARGE MEASUREMENTS of Monte Creek above Bostock's Diversion, for 1914.

Date		Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
				Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May	7	E. H. Tredcroft	1055	22	28·4	1·71	1·70	48·6
June	21	C. G. Corbould	1915	19	11·4	0·54	0·90	6·2
July	21	do	1915	8	[illegible]	[illegible]	0·70	2·5
Sept	22	do	1915	7	[illegible]	0·66	0·59	1·9

For further hydrographic data see Water Resources Paper Nos. 1 and [illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek above Bostock's Diversion, for 1914.

Day.	April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·99	8·6		37·1		[illegible]
2		8·7	1·59	40·3		[illegible]
3		8·8		44·0	1·22	[illegible]
4	1·00	8·9		47·8		[illegible]
5		10·2		51·5		[illegible]
6		11·5	1·78	55·3	1·25	[illegible]
7		12·8		50·8		[illegible]
8	1·14	14·0		46·3		[illegible]
9		15·6	1·61	41·8		[illegible]
10		17·2		50·1	1·10	[illegible]
11	1·25	18·9		58·4		[illegible]
12		21·0		66·7		[illegible]
13		23·1	1·97	75·0	1·12	[illegible]
14		25·2		71·2		[illegible]
15	1·40	27·3		67·5		[illegible]
16		28·0	1·87	63·8		[illegible]
17		28·6		59·7	1·05	[illegible]
18	1·43	29·2		55·5		[illegible]
19		28·8		51·3		[illegible]
20		28·5	1·68	47·1	1·00	[illegible]
21		28·2		42·8		[illegible]
22	1·41	27·9		38·6		[illegible]
23		27·3	1·51	34·4		[illegible]
24		26·7		34·6	0·91	[illegible]
25	1·38	26·1		34·7		[illegible]
26		27·2		34·8		[illegible]
27		28·3		35·0	0·87	[illegible]
28		29·4	1·52	35·2		[illegible]
29	1·45	30·5		30·6		[illegible]
30		33·8		26·0		[illegible]
31			1·30	21·3		

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek above Bostock's Diversion, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft	Feet		Feet	Sec.-ft	Feet.	Sec.-ft
1	0·80	4·2	0·60	1·8		0·3				2·7	0·70	
2		4·1		1·8	0·40	0·2				2·7		
3		3·9		1·7		0·4	0·57			2·6		
4	0·77	3·8		1·6		0·6			67	2·5	0·72	
5		3·5	0·57	1·5	0·50	0·8		1·6		2·6		
6		3·3		1·5		0·8		1·7		2·7		
7		3·0		1·6		0·8	0·60	1·8	0·70	2·8		
8	0·70	2·8		1·7		0·9		1·8		2·8		
9		2·8	0·60	1·8	0·51	0·9		1·9		2·8		
10		2·8		1·7		0·9	0·62	2·0		2·8		
11	0·70	2·8		1·5		0·8		2·0	0·70	2·8		
12		3·1	0·55	1·3	0·50	0·8		2·0		2·7		
13		3·5		1·2		1·0		2·0		2·6		
14		3·9		1·0		1·1	0·62	2·0	0·67	2·5		
15	0·80	4·2	0·50	0·8		1·2		2·2		2·5		
16		4·0		0·8	0·55	1·3		2·4		2·6		
17		3·9		0·8		1·3	0·67	2·5		2·7		
18	0·77	3·8		0·8		1·3		2·5	0·70	2·8		
19		3·6	0·50	0·8	0·55	1·3		2·4		2·7		
20		3·3		0·8		1·3		2·3		2·6		
21		3·0		0·8		1·3	0·65	2·3	0·67	2·5		
22	0·70	2·8	0·50	0·8		1·3		2·3		2·8		
23		2·7		0·8	0·55	1·3		2·4		3·2		
24		2·5		0·7		1·3	0·67	2·5		3·5		
25	0·65	2·3		0·6		1·4		2·5	0·77	3·8		
26		2·1	0·45	0·5	0·57	1·5		2·5		3·5		
27		2·0		0·5		1·4		2·5		3·1		
28		1·9		0·5		1·4	0·67	2·5	0·70	2·8		
29	0·60	1·8	0·45	0·5		1·3		2·6		2·8		
30		1·8		0·5	0·55	1·3		2·7		2·8		
31		1·8		0·4			0·70	2·8				

MONTHLY DISCHARGE of Monte Creek above Bostock's Diversion, for 1914.

(Drainage area, 110 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET		
	Maximum.	Minimum	Mean
	33·8	8·6	22·0
	75·0	21·3	46·7
	20·0	4·5	11·5
	4·2	1·8	3·1
mber	1·8	0·4	1·1
er	1·5	0·2	1·0
mber	2·8	1·4	2·1
mber	3·8	2·5	2·8
period	75·0	0·2	11·3

te —Summary for "the period" covers April to November (inclusive).
The run-off (not given in table) is not a direct function of the drainage area, since there is a large diversion Monte Creek to Summit lake.
Rainfall varies from 10 to20 inches annually

MYRTLE RIVER.

The Myrtle river rises in Myrtle lake just a mile west of the Blue River divide. Myrtle lake is surrounded by fairly level country, and is at an elevation of about 3,000 feet. Its superficial area is about 15 square miles. No information has been obtained regarding the storage facilities of the lake; however, it is interesting to note that with the area given above, a 5-foot dam

Myrtle River, Dawson Falls

Photograph by F. R. Arch

One of the many natural power sites on the Myrtle river. This photograph, taken at a low stage shows Dawson falls, which are about four miles upstream from Helmcken Falls.

would give an increased storage capacity of 48,000 acre-feet (at least), wh would mean an increase in minimum flow for continuous power of about second-feet (assuming a shortage of water for 300 days). The wonderful lat power possibilities of the river warrant a much more thorough investigat

The following are the more important power sites:—

Name of Falls.	Natural Head.	Distance from mouth of Myrtle River and Location.
Helmcken falls	450 feet (triangulated)	1 mile; in lot 3210.
Dawson falls	Three lower falls 20 feet each (approx.) Upper fall 50 feet (approx)	3 miles; in lot 3208
Un-named falls..	25 feet (approx.)	10 miles; in lot 3494.
Horseshoe falls	35 feet (approx)	12 miles; in lot 3499.
Meadow falls	20 feet (approx)	13 miles, in lot 3998
Un-named falls .	Said to be about 40 feet	20 miles; a mile or two below lake outlet.

Helmcken Falls and Myrtle river canyon.

Photograph by F. R. Archibald.

This photograph of Helmcken falls on the Myrtle river is one of the first ever taken of what is bably one of the finest natural power sites of British Columbia's vast hinterland A sheer fall of 450 triangulated) over which a stream plunges whose estimated minimum flow is 400 sec.-ft., and whose ximum is probably 10,000 sec.-ft., is an unusual sight and one which for majestic grandeur is probably surpassed in the Dominion. Studies of the flow of the Myrtle river have been commenced and a r's cycle will be complete on Sept. 1, 1915.

For a matter of historic record it should be stated that Helmcken falls (a otograph of which is printed eleswhere) were discovered by two members of land survey party in charge of Mr. R. H. Lee, of Kamloops, in the summer of 913 (Messrs. Luce and Hossack). Although they were said to be known to Indians, who spoke of them as "the falls which are two big cedars high," se two men are the first white men which are known to have seen the falls. r scenic beauty this wonderful natural power-site is probably without a peer, l will sooner or later become a mecca for tourists from various parts of the rld.

The total length of Myrtle river is about 22 miles between the lake and the river's confluence with the Clearwater.

A gauge was established on the Myrtle river on September 1, 1914, by Messrs. E. H. Tredcroft and C. B. Corbould, and a meter measurement made showing a flow of 800 second-feet. After further measurements are made, a year's cycle of records will be available on September 1, 1915. Gauge readings are taken by Mr. P. McDougall weekly. Owing to the inaccessibility of the station, it has been impossible to procure more readings, but, since the stream's behaviour is fairly regular, it is thought that fairly reliable results will be obtained. A very rough estimate, made by comparison of the Myrtle drainage area with that of the Clearwater, places the minimum flow at 400 and the maximum at 10,000 second-feet.

PAUL CREEK (2032).

Location.—Section 31, township 20, range 16, west 6th meridian.

Records available.—July 1 to October 6, 1911; May 12 to September 25, 1912; May 18 to September 30, 1913; April 20 to September 27, 1914.

Drainage area.—Sixty-five square miles.

Gauge.—Vertical staff gauge read weekly by E. L. Ridout.

Channel.—Channel is rocky, and current is very swift at high stages.

Discharge measurements.—The gauge-height curve is fairly well defined. The flow is artificially controlled by a dam on Paul lake.

Winter flow.—Stream usually dries up during winter, or else ice conditions obtain.

Accuracy.—Accuracy, with the exception of flood times, is considered high.

DISCHARGE MEASUREMENTS of Paul Creek below Paul Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Dischar
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec
April 27	E. M. Dann	1505	5·5	4·60	9·02	2·25	[illegible]
May 19	C. B. Corbould	1673	5·7	6·05	11·50	2·75	[illegible]
July 14	C. B. Corbould	1915	7·0	2·70	5·50	1·95	[illegible]
" 25	E. M. Dann and C. E. Webb	1915	5·8	1·98	6·44	1·73	[illegible]
Aug. 8	C. B. Corbould	1915	6·0	3·26	7·90	2·12	[illegible]

For further hydrographic data see Water Resources, Paper Nos. 1 and 8

DAILY GAUGE HEIGHT AND DISCHARGE of Paul Creek below Paul Lake, for 1914.

Day.	April.		May.		June.		July.		August		September	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft
1	.....	.....	....	42·9	...	14·9	.....	30·8		12·0	.....	13·2
2	.....	.....	......	45·4	......	17·4	.....	30·0	1·72	11·7	....	12·7
3	..	..	.....	48·0	....	20·0	.....	29·2		13·0	......	12·2
4	.....		2·50	50·5	....	22·5		28·4		14·2		11·7
5			....	55·0	....	25·0	2·15	27·6		15·5		11·2
6				59·5		27·5		26·8		16·6		10·7
7				64·0	2·20	30·2		25·9		17·9	1·65	10·2
8				68·5		31·8		25·0		19·2		9·5
9				73·0		33·4		24·1	2·00	20·5		8·8
10		..	2·83	77·6		35·0		23·2		20·5		8·1
11			...	79·4		36·6		22·3		20·5		7·4
12				81·2	..	38·2		21·4		20·5		6·7
13			...	83·0		39·8	2·00	20·5		20·5	1·40	6·0
14		....	....	84·7		41·4		19·8		20·5		5·6
15			..	86·5	2·4	43·0		19·2		20·5		5·2
16				88·3		45·1		18·6	2·00	20·5		4·8
17		.....	3·00	90·0		47·3		18·0		20·0		4·4
18				87·1		49·4		17·4		19·5		3·9
19				84·2		51·6	1·90	16·8		19·0		3·5
20	1·10	2·6		81·3		53·7		16·3		18·4	[illegible]·15	3·1
21		7·2	....	78·4		55·8		15·9		17·0		2·7
22		11·8	.....	75·5	2·60	58·0		15·4		17·3		2·4
23		16·4		72·6		53·9		15·0	1·90	16·8		2·0
24		21·0	2·75	69·7		49·8		14·5		16·5		1·7
25		25·6		61·6		45·7		14·1		16·1		1·4
26	2·20	30·2		53·4		41·5	1·80	13·[illegible]		15·7		1·0
27		32·7		45·2		37·4		13·5		15·3	0·90	0·7
28		35·2		37·0	2·25	33·3		13·2		14·9		
29		37·8		28·8		32·4		12·9		14·5		
30	..	40·3		20·6	......	31·6	...	12·6		14·1		
31			1·75	12·4				12·3	1·80	13·7		

MONTHLY DISCHARGE of Paul Creek below Paul Lake, for 1914.

(Drainage area, 65 square miles.)

Month.	Discharge in Second-Feet.				Run-Off	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
M[illegible]	90·0	12·4	64·0	0·98	1·1	3,935
J[illegible]	58·0	14·9	38·1	0·6	·7	2,267
J[illegible]	30·8	12·3	19·8	0·3	·3	1,217
A[illegible]t	20·5	11·7	17·2	0·26	·3	1,057
S[illegible]mber	13·2	0·7	6·3	0·97	1·1	375
[illegible]er						
N[illegible]mber						
D[illegible]mber						
[illegible]eriod	90·0	0·7	29·1	0·62	3·5	8,851

[illegible]s —Precipitation 10 to 50 inches annually.
Flow artificially controlled by a dam on Paul lake
The estimated flow for April is 600 acre-feet, while during the winter months the run-off is practically nil

RAFT RIVER (2055).

Location.—Raft river, Water District No. 2.

Records Available.—June 1, 1914, to December 14, 1914.

Drainage Area.—One hundred and twenty-five square miles.

Gauge.—Standard chain gauge on highway bridge, graduated in feet and tenths, having a range from 3.0 to 9.0, and read by J. McLennan, Raft River P.O.

Channel.—Average width of channel 150 feet. Bed of stream composed of rock, sand, and gravel, and permanent as far as can be ascertained.

Discharge Measurements.—Only three discharge measurements were taken on this river during 1914 owing to its being situated in country only just being opened up by this survey, but all results of these measurements point to a high degree of accuracy eventually being obtained.

Winter Flow.—Ice conditions obtain on this river during the latter half of December, throughout January, and during the first half of February.

Accuracy.—The accuracy of returns is doubtful, since stream is not completely rated.

RAFT RIVER.

Raft river, which joins the North Thompson 76 miles above Kamloops and 5 miles above the mouth of the Clearwater river, rises in the hills about 10 miles north of its mouth.

The lowest half-mile of the river has a sluggish flow, its banks are low and liable to overflow in freshet. Above this point is a canyon about 500 feet wide at its widest section; in the canyon are a series of falls, the two highest being about three-quarters of a mile from the stream's mouth, the lower having a natural drop of 15 feet, and the upper one, 25 feet. No information relating to the upper section of the river is at present available.

A station was established at MacLennan's ranch, half a mile from the mouth, by Mr. E. H. Tredcroft on June 2, 1914. Although it was impracticable to thoroughly rate the stream during the year, further meterings will be taken in 1915, and more complete returns made public at the close of that year.

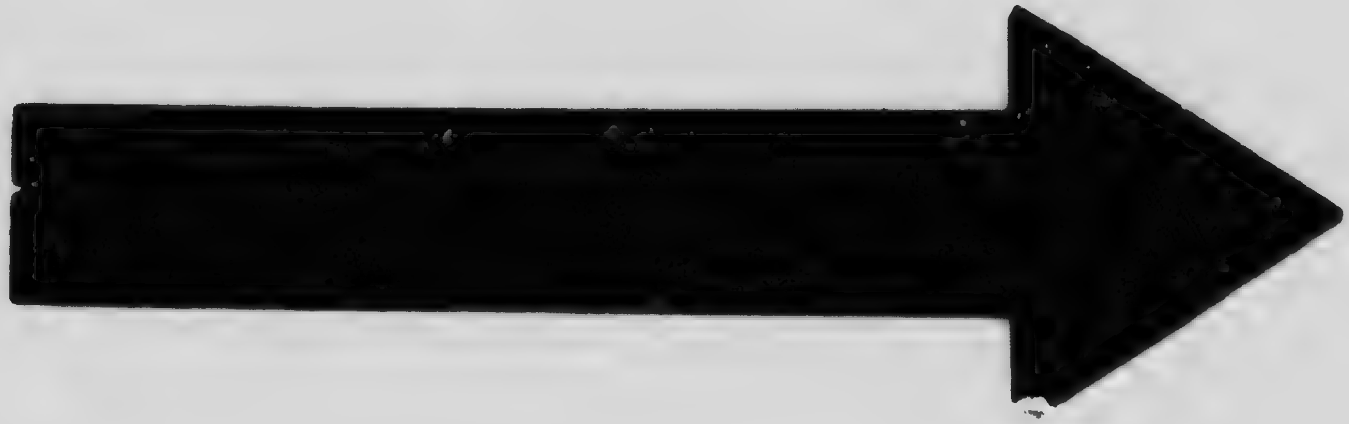
DISCHARGE MEASUREMENTS of Raft River near mouth, for 1914.

Date	Hydrographer	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Disc
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec
June 2	E. H. Tredcroft	1923	105	493·8	5·47	8.00	27
July 26	do	1923	80	135·4	2·05	4·35	[illegible]
Aug 28	E. H. Tredcroft and C. B. Corbould	1923	67	71·7	1·18	3·55	[illegible]

An effort will be made to completely rate this station during 1915

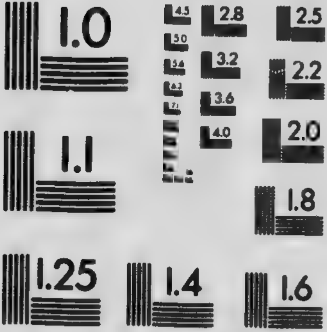
Daily Gauge Height and Discharge of Raft River, 1 mile above mouth, for 1914.

Day.	June	
	Gauge Height	Discharge
	Feet	Sec.-ft.
1	8·30	2,940
2	7·90	2,620
3	8·20	2,860
4	7·80	2,540
5	7·30	2,145
6	6·80	1,760
7	6·40	1,450
8	6·50	1,525
9	6·70	1,680
10	7·00	1,920
11	7·20	2,070
12	7·30	2,145
13	7·10	2,000
14	7·20	2,070
15	7·20	2,070
16	7·40	2,220
17	7·50	2,300
18	7·00	1,920
19	6·90	1,840
20	6·40	1,450
21	6·40	1,450
22	6·10	1,240
23	6·10	1,240
24	6·30	1,380
25	6·40	1,450
26	6·30	1,380
27	6·20	1,310
28	6·30	1,380
29	6·30	1,380
30	6·10	1,240



MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



APPLIED IMAGE Inc
1653 East Main Street
Rochester, New York 14609 USA
(716) 482 - 0300 – Phone
(716) 288 - 5989 – Fax

DAILY GAUGE HEIGHT AND DISCHARGE of Raft River 1 mile above mouth, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5·90	1,100	3·90	155	3·30	50	4·50	330	4·60	370	3·90	155
2	5·70	960	3·80	135	3·20	35	4·40	295	4·50	330	3·90	155
3	5·70	960	3·70	115	3·20	35	4·40	295	4·60	370	3·90	155
4	5·60	895	3·80	135	3·20	35	4·20	235	4·50	330	3·80	135
5	5·50	830	3·70	115	3·10	20	4·10	205	4·40	295	3·80	135
6	5·30	710	3·60	95	3·10	20	4·00	180	4·20	235	3·70	115
7	5·20	655	3·70	115	3·10	20	4·00	180	4·20	235	3·80	135
8	5·10	605	3·80	135	3·20	35	3·90	155	4·20	235	3·80	135
9	5·00	555	3·70	115	3·30	50	3·90	155	4·20	235	3·90	155
10	4·90	505	3·70	115	3·50	80	3·90	155	4·20	235	3·90	155
11	4·70	410	3·70	115	3·70	115	4·00	180	4·10	205	3·90	155
12	4·70	410	3·60	95	3·90	155	4·10	205	4·10	205	4·10	205
13	5·00	555	3·60	95	3·90	155	4·30	265	3·90	155	4·70	410
14	5·40	770	3·50	80	3·80	135	4·40	295	3·90	155	5·20	655
15	6·20	1,310	3·40	65	3·70	115	4·20	235	3·90	155		
16	5·35	740	3·40	65	3·70	115	4·00	180	4·00	180		
17	5·05	580	3·40	65	3·80	135	4·30	265	4·10	205		
18	4·75	432	3·40	65	4·20	235	4·90	505	4·10	205		
19	4·65	390	3·40	65	4·50	330	4·90	505	4·00	180		
20	4·45	312	3·40	65	4·60	370	4·70	410	4·00	180		
21	4·40	295	3·30	50	4·40	295	4·60	370	3·90	155		
22	4·35	280	3·30	50	4·30	265	4·40	295	3·80	135		
23	4·30	265	3·20	35	4·20	235	4·20	235	3·80	135		
24	4·30	[illegible]	3·20	35	4·20	235	4·20	235	3·70	115		
25	4·20	235	3·20	35	4·10	205	4·20	235	3·70	115		
26	4·10	205	3·20	35	4·00	180	4·20	235	3·80	135		
27	4·20	235	3·20	35	4·20	235	4·20	235	3·90	155		
28	4·90	505	3·40	65	4·30	265	4·40	295	3·90	155		
29	4·30	265	3·40	65	4·50	330	4·40	295	3·90	155		
30	4·20	235	3·40	65	4·50	330	4·60	370	3·90	155		
31	4·10	205	3·30	50	.	...	4·60	370		..		

MONTHLY DISCHARGE of Raft River at 1 mile above mouth, for 1914.

(Drainage area, 125 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
June	2,940	1,240	1,499	12·0	13·39	89,1
July	1,310	205	538	4·3	4·9	33,0
August	155	35	81	0·65	0·75	4,9
September	370	20	160	1·3	1·45	9,5
October	505	155	271	2·2	2·54	16,0
November	370	115	203	1·6	1·78	12,0

NOTE.—Precipitation varies from 20 inches at mouth to 50 inches at source (estimated)
Drainage area possibly in error
Station established, June, 1914

SIWASH CREEK (2058).

Location.—Section 12, township 22, range 16, west 6th meridian.

Records Available.—June 7 to July 28, 1914.

Drainage Area.—Seven square miles.

Gauge.—Standard vertical staff gauge installed by Cippoletti weir and read daily by J. S. Wardell.

Channel.—Straight above weir. Velocity, medium.

Discharge Measurements.—Three discharge measurements have been taken during 1914 at varying stages.

Winter Flow.—Stream usually runs dry during August.

Accuracy.—Accuracy of results compiled from weir discharge table considered very high, probably within 5 per cent.

DISCHARGE MEASUREMENTS of Siwash Creek, above Heffley Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq ft.	Ft per sec.	Feet	Sec.-ft.
June 2	C. B. Corbould	1915	6	4·0	0·71		2·9
" 8	do	1915	6	4·7	0·89	2·9	4·2
" 29	do	1915	6	3·8	0·45	2·8	1·7

Meterings taken to check weir measurements.

DAILY GUAGE HEIGHT AND DISCHARGE of Siwash Creek, near Heffley Creek, for 1914.

Day.	June.		July.	
	Gauge Height.	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	..	.	0·19	1·1
2	.....	2·9	0·14	0·7
3	....	....	0·14	0·7
4	....	...	0·14	0·7
5	..	....	0·12	0·6
6	.	..	0·12	0·6
7	0·34	2·7	0·14	0·7
8	0·34	2·7	0·04	0·1
9	0·36	2·9	0·04	0·1
10	0·39	3·2	0·04	0·1
11	0·44	3·8	0·04	0·1
12	0·34	2·7	0·04	0·1
13	0·34	2·7	0·04	0·1
14	0·34	2·7	0·04	0·1
15	0·29	2·1	0·14	0·7
16	0·29	2·1	0·09	0·4
17	0·24	1·6	0·09	0·4
18	0·24	1·6	0·04	0·1
19	0·24	1·6	0·04	0·1
20	0·24	1·6	0·04	0·1
21	0·24	1·6	0·04	0·1
22	0·19	1·1	0·04	0·1
23	0·24	1·6	0·04	0·1
24	0·24	1·6	0·04	0·1
25	0·24	1·6	0·04	0·1
26	0·24	1·6	0·04	0·1
27	0·24	1·6	0·04	0·1
28	0·24	1·6	0·04	0·1
29	0·24	1·6		
30	0·19	1·1		
31		..	.	

MONTHLY DISCHARGE of Siwash Creek above Heffley Lake, for 1914.

(Drainage area, 7 square miles.)

Month	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
June	3·8	1·1	2·1	0·30	0·33	1
July	1·1	0·1	0·3	0·04	0·05	[illegible]

NOTE.—Station was established on June 7. Water stopped coming down the creek on July 30. Cippoletti weir stat

THOMPSON RIVER AT KAMLOOPS (2040).

Location.—Section 7, township 20, range 17, west 6th meridian.

Records Available.—April 1 to September 30, 1911; March 24 to Decem 31, 1912; April 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—14,400 square miles.

Gauge.—Standard staff gauge on traffic bridge, read daily by Geo. Clapperton.

Channel.—Width of channel varies from 750 to 850 feet at the station, while at high-water depth is from 12 to 17 feet higher than at low stages.

Discharge Measurements.—The curve for this river is well defined, measurements having been taken at various stages.

Winter Flow.—River generally freezes over about 1st January, and remains so until early in March.

On March 5, 1912, a metering was made under ice cover and showed a discharge of 3,980 second-feet.

Accuracy.—The accuracy on the whole is high.

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Kamloops, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·10	5,300	0·10	5,300	0·20	5,600	0·10	5,300	3·70	18,950	8·10	45,000
2	0·20	5,600	0·10	5·300	0·20	5,600	0·20	5,600	4·10	20,800	8·4	47,300
3	0·20	5·600	0·10	5·300	0·30	5,900	0·20	5,600	4·70	23,800	8·6	48,800
4	0·30	5,900	0·10	5·300	0·20	5,600	0·10	5,300	5·50	28,000	10·0	60,200
5	0·30	5,900	0·0	5,000	0·20	5,600	0·20	5,600	5·90	30,400	10·6	65,200
6	0·20	5,600	0·0	5,000	0·20	5,600	0·20	5,600	5·60	28,600	10·6	65,200
7	0·30	5,900	0·0	5,000	0·20	5,600	0·20	5,600	5·30	26,800	10·2	61,800
8	0·50	6,600	0·0	5,000	0·30	5,900	0·30	5,900	5·50	28,000	10·0	60,200
9	0·50	6,600	0·0	5,000	0·20	5,600	0·50	6,600	5·60	28,600	9·8	58,500
10	0·30	5,900	0·0	5,000	0·20	5,600	0·60	6,950	5·50	28,000	9·5	56,000
11	0·40	6,250	0·0	5,000	0·20	5,600	0·80	7,550	5·80	29,800	9·5	56,000
12	0·30	5,900	0·0	5,000	0·20	5,600	0·90	7,900	6·20	32,100	9·8	58,500
13	0·30	5,900	0·0	5,000	0·30	5,900	1·10	8,500	6·60	34,600	9·8	58,500
14	0·20	5,600	0·0	5,000	0·40	6,250	1·20	8,900	6·80	35,800	10·0	60,200
15	0·20	5,600	0·2	4,500	0·30	5,900	1·60	10,350	7·60	41,400	10·4	63,500
16	0·30	5,900	0·2	4,500	0·20	5,600	1·90	11,500	8·60	48,800	10·9	67,700
17	0·40	6,250	0·2	4,500	0·20	5,600	2·40	13,400	9·20	53,600	11·4	72,000
18	0·30	5,900	0·2	4,500	0·30	5,900	2·50	13,800	9·20	53,600	11·8	75,500
19	0·30	5,900	0·2	4,500	0·20	5,600	2·50	13,800	9·00	52,000	12·0	77,300
20	0·20	5,600	0·2	4,500	0·20	5,600	2·80	15,000	8·70	49,700	12·0	77,300
21	0·20	5,600	0·2	4,500	0·20	5,600	2·80	15,000	8·50	48,050	11·6	73,700
22	0·20	5,600	0·2	4,500	0·20	5,600	2·80	15,000	8·60	48,800	11·2	70,300
23	0·20	5,600	0·2	4,500	0·20	5,600	3·00	15,800	8·90	51,200	11·4	72,000
24	0·20	5,600	0·2	4,500	0·30	5,900	2·90	15,400	9·20	53,600	10·6	65,200
25	0·20	5,600	0·2	4,500	0·20	5,600	2·90	15,400	9·60	56,800	10·1	61,700
26	0·20	5,600	0·1	4,750	0·20	5,600	3·10	16,250	9·80	58,500	9·8	58,500
27	0·10	5,300	0·1	4,750	0·10	5,300	3·30	17,150	9·60	56,800	9·8	58,500
28	0·10	5,300	0·2	5,600	0·10	5,300	3·40	17,600	9·30	54,400	10·0	60,200
29	0·10	5,300	.....	....	0·20	5,600	3·30	17,150	8·90	51,200	10·0	60,200
30	0·20	5,600	....	...	0·0	5,000	3·50	18,050	8·50	48,050	10·1	61,000
31	0·20	5,600	......	....	0·0	5,000	.....	..	8·30	46,500	......	......

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Kamloops, for 1914.

DAY.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharg
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	10·1	61,000	6·50	34,000	3·50	18,050	4·00	20,300	2·50	13,800	2·20	12,6
2	10·2	61,800	6·30	32,700	3·30	17,150	4·20	21,300	3·00	15,800	2·00	11,8
3	10·5	64,300	6·40	33,400	3·20	16,700	4·10	20,800	3·00	15,800	2·10	12,2
4	10·7	66,000	6·50	34,000	3·00	15,800	4·20	21,300	3·10	16,250	1·80	11,1
5	10·9	67,700	6·50	34,000	3·50	18,050	3·50	18,050	3·20	16,700	1·70	10,7
6	10·9	67,700	6·50	34,000	3·30	17,150	3·20	16,700	3·00	15,800	1·80	11,1
7	10·7	66,000	6·20	32,100	3·40	17,600	3·00	15,800	3·10	16,250	1·60	10,35
8	10·3	62,600	6·00	30,900	3·20	16,700	2·80	15,000	2·80	15,000	1·40	9,65
9	10·1	61,000	6·00	30,900	3·00	15,800	2·70	14,600	2·70	14,600	1·40	9,65
10	9·8	58,500	5·60	28,600	3·00	15,800	2·50	13,800	2·80	15,000	1·30	9,25
11	9·6	56,800	5·30	26,800	3·50	18,050	2·30	13,000	2·60	14,200	1·20	8,9
12	9·60	56,800	5·00	25,300	3·10	16,250	2·20	12,600	2·70	14,600	0·70	7,3
13	9·6	56,800	4·90	24,800	3·20	16,700	2·50	13,800	2·80	15,000	0·40	6,250
14	9·8	58,500	4·80	24,300	3·00	15,800	2·40	13,400	2·60	14,200	0·0	5,00
15	10·0	60,200	4·70	23,800	2·80	15,000	2·30	13,000	2·60	14,200	0·0	5,00
16	10·4	63,500	4·60	23,300	2·50	13,800	2·20	12,600	2·50	13,800	0·0	5,00
17	10·2	61,800	5·00	25,300	2·30	13,000	2·50	13,800	2·50	13,800	0·0	5,000
18	9·6	56,800	4·90	24,800	2·20	12,600	2·30	13,000	2·40	13,400	0·0	5,000
19	9·0	52,000	4·80	24,300	2·10	12,200	2·20	12,600	2·50	13,800	0·0	5,000
20	8·7	49,700	4·50	22,800	2·20	12,600	3·10	16,250	2·30	13,000	0·0	5,000
21	8·6	48,800	4·40	22,300	3·00	15,800	3·10	16,250	2·20	12,600	0·0	5,000
22	8·8	50,500	4·50	22,800	2·80	15,000	3·00	15,800	2·10	12,200	0·0	5,000
23	8·1	45,000	4·50	22,800	3·00	15,800	3·10	16,250	2·00	11,800	0·0	5,000
24	7·7	42,100	4·40	22,300	2·80	15,000	2·80	15,000	2·30	13,000	0·0	5,000
25	7·6	41,400	4·10	20,800	2·70	14,600	2·70	14,600	2·20	12,600	0·0	5,000
26	7·5	40,700	4·00	20,300	2·90	15,400	2·60	14,200	2·00	11,800	0·0	5,000
27	7·4	40,000	4·00	20,300	3·00	15,800	2·50	13,800	2·10	12,200	0·0	5,000
28	7·4	40,000	4·00	20,300	3·50	18,050	2·30	13,000	1·80	11,100	0·0	5,00
29	7·5	40,700	3·80	19,400	4·00	20,300	2·30	13,000	1·80	11,100	0·0	5,0
30	7·1	37,900	3·80	19,400	4·00	20,300	2·50	13,800	1·70	10,700	0·0	5,0
31	6·6	34,600	4·00	20,300	...	....	2·40	13,400		..	0·0	5

MONTHLY DISCHARGE of Thompson River at Kamloops, for 1914.

(Drainage area, 14,400 square miles.)

Month.	Discharge in Second-Feet.				Run-Off	
	Maximum.	Minimum	Mean.	Per square mile.	Depth in inches on Drainage [illegible]	Total in acre-feet.
January	6,600	5,300	5,755	0·40	0·46	353,860
February	5,300	4,500	4,850	0·33	0·34	269,360
March	6,250	5,000	5,621	0·39	0·45	345,622
April	18,050	5,300	11,051	0·76	0·85	657,580
May	58,500	18,950	40,879	2·84	3·27	2,513,519
June	77,300	45,000	62,510	4·34	4·84	3,719,600
July	67,700	34,600	53,909	3·74	4·31	3,314,752
August	34,000	19,400	25,842	1·79	2·06	1,588,962
September	20,300	12,200	16,028	1·11	1·24	953,727
October	21,300	12,600	15,187	1·05	1·21	933,807
November	16,700	10,700	13,803	0·95	1·06	821,377
December	12,600	5,000	7,124	0·49	0·56	438,038
The year	77,600	4,500	21,879	1·51	20·65	15,910,204

NOTE.—The annual precipitation of the North Thompson river above Kamloops varies from 7 to 12 inches at Kamloop to about 40 inches at the Albreda summit, while on the South Thompson, Shuswap lakes, and tributary streams it varies to a maximum of 40 inches annually.

It is to be noted that the flow recorded at the station "Thompson river at Kamloops" comprises that of both the North and South Thompson, the station being established below their confluence

TRANQUILLE RIVER (2043).

Location.—Section 36, township 20, range 19, west 6th meridian.

Records Available.—July 4 to October 21, 1911; March 29 to September 7, 1912; May 1 to October 31, 1913; May 3 to November 14, 1914.

Drainage Area.—Two hundred and thirty square miles.

Gauge.—Standard vertical gauge read daily by Eug. Cooney.

Channel—Straight at the gauge section, about 20 feet wide. Bed of stream composed of stone and boulders and control is good.

Discharge Measurements.—Gauge-height discharge curve is well defined.

Winter Flow.—Ice conditions prevail during December, January, and February.

Accuracy.—High, results compiled from a well-rated curve.

DISCHARGE MEASUREMENTS of Tranquille River near mouth, for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
30	C. B. Corbould	1915	18·5	31·0	4·24	1·35	132·0
4	C. B. Corbould	1915	15	14·5	0·59	0·65	8·6

For further meterings and hydrogrpahic data see Water Resources Paper Nos. 1 and 8

DAILY GAUGE HEIGHT AND DISCHARGE of Tranquille River at Cooney's Ranch, for 1914.

Day	May.		June	
	Gauge Height	Dis-charge	Gauge Height	Di-cha
	Feet.	Sec.-ft.	Feet.	Sec
1	.	.	1·35	
2			1·35	
3	2·70	577	1·30	
4	2·70	577	1·25	
5	2·20	340	1·20	
6	2·10	302	1·20	
7	2·10	302	1·27	
8	2·10	302	1·30	
9	2·10	302	1·30	
10	2·20	340	1·32	
11	2·30	382	1·37	
12	2·60	524	1·32	
13	2·60	524	1·30	
14	2·60	524	1·30	
15	2·70	577	1·30	
16	2·50	473	1·25	
17	2·40	427	1·25	
18	2·20	340	1·20	
19	2·10	302	1·15	
20	2·00	267	1·12	
21	1·95	250	1·10	
22	1·90	234	1·10	
23	1·85	219	1·12	
24	1·80	204	1·15	
25	1·75	189	1·20	
26	1·60	150	1·17	
27	1·50	125	1·12	
28	1·40	101	1·10	
29	1·35	90	1·07	
30	1·32	84	1·05	
31	1·32	84		

DAILY GAUGE HEIGHT AND DISCHARGE of Tranquille River at Cooney's Ranch, for 1915.

Day.	July.		August.		September.		October.		November.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	1·02	34	0·70	10	0·44	4	0·59	7	0·69	10
2	1·00	31	0·67	9	0·44	4	0·61	7	0·69	10
3	0·97	28	0·67	9	0·44	4	0·61	7	0·69	10
4	0·92	23	0·65	8	0·44	4	0·59	7	0·71	10
5	0·90	21	0·64	8	0·44	4	0·59	7	0·74	12
6	0·90	21	0·61	7	0·44	4	0·59	7	0·74	12
7	0·87	19	0·64	8	0·44	4	0·59	7	0·71	10
8	0·87	19	0·66	9	0·54	6	0·59	7	0·71	10
9	0·85	18	0·64	8	0·56	6	0·59	7	0·71	10
10	0·82	16	0·64	8	0·56	6	0·59	7	0·71	10
11	0·80	15	0·61	7	0·56	6	0·59	7	0·71	10
12	0·80	15	0·61	7	0·56	6	0·64	8	0·71	10
13	0·77	13	0·59	7	0·56	6	0·61	7	0·71	10
14	0·80	15	0·56	6	0·59	7	0·61	7	0·79	14
15	0·82	16	0·56	6	0·59	7	0·61	7		
16	0·82	16	0·54	6	0·59	7	0·61	7		
17	0·80	15	0·54	6	0·59	7	0·61	7		
18	0·77	13	0·51	5	0·59	7	0·61	7		
19	0·75	12	0·51	5	0·61	7	0·64	8		
20	0·72	11	0·49	5	0·59	7	0·64	8		
21	0·77	13	0·49	5	0·59	7	0·64	8		
22	0·75	12	0·54	6	0·59	7	0·64	8		
23	0·72	11	0·51	5	0·59	7	0·64	8		
24	0·80	15	0·49	5	0·59	7	0·64	8		
25	0·75	12	0·49	5	0·61	7	0·64	8		
26	0·70	10	0·49	5	0·61	7	0·64	8		
27	0·70	10	0·46	4	0·59	7	0·64	8		
28	0·70	10	0·46	4	0·59	7	0·64	8		
29	0·70	10	0·46	4	0·59	7	0·64	8		
	0·70	10	0·44	4	0·59	7	0·64	8		
1	0·70	10	0·44	4	......	.....	0·64	8		

MONTHLY DISCHARGE of Tranquille River, near Cooney's Ranch, for 1914.

(Drainage area, 230 square miles.)

Month.	Discharge in Second Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May	577·0	84·0	314·0	1·36	1·57	19,307
June	95·0	38·0	66·0	0·29	0·32	3,927
	34·0	10·0	16·0	0·07	0·08	984
st	10·0	4·0	6·3	0·03	0·03	387
nber	7·0	4·0	6·1	0·03	0·03	363
ober	8·0	7·0	7·4	0·03	0·03	455
period	577·0	4·0	69·3	0·30	2·06	25,423

NOTE.—Precipitation over the drainage area probably varies from 8 to 10 inches annually, but it is probable that there ge evaporation losses in Dubois, Pass, and Tranquille lakes.

KAMLOOPS DIVISION.

ADAMS RIVER (2005).

Location.—Section 6, township 23, range 12, west 6th meridian.

Records Available—July 1 to August 31, 1911; January 1 to December 31, 1912; January 1st to December 31, 1913; January 1 to December 31, 1914

Drainage Area.—One thousand six hundred square miles.

Gauge.—Standard vertical staff gauge read by Mrs. Sturgill, Chase, B.C., up to October 17, 1914.

On October 17, a Gurley automatic water stage recorder No. 630 was put into operation, at a point 50 feet below the old staff gauge. A series of readings on both gauges at the same instant gives a definite relationship between old and new gauge readings.

Channel.—The channel varies in width from 300 to 500 feet above the dam where meterings are made. The velocities are uniform, the mean never exceeding 3.0 feet per second at the measuring section. The run-off is artificially controlled by a dam near the outlet of Adams lake.

Discharge Measurements.—The gauge-height discharge curve is fairly well rated by well distributed meterings.

Winter Flow.—Partial ice conditions exist during winter months, but the river is seldom frozen over at the gauge sufficiently to have material effect on the accuracy of returns.

Accuracy.—The accuracy of returns on the whole is fairly high, the only possibility of error being in the gauge heights, sudden changes in which, owing to the opening and closing of the Adams River Lumber Company's dam may have escaped the observer's notice. This error will be entirely overcome in 1915.

Adams Lake. Photograph by Eyre M. D.

Looking north from the south end of Adams lake, which forms a splendid natural reservoir site possible power development on Adams river. Adams lake empties into Adams river, falling 190 in its six-mile course to Shuswap lake.

Adams River Automatic Gauge House.

Photograph by Eyre M. Dann.

The gauge house is of timber construction and is covered by galvanized iron sheeting for fire ection. The well lining is an Ingot iron culvert (24 inch diameter) in which the float and weights tate. The culvert stands in the middle of a timber and rock-fill cribbing upon which the house is A 2¼ inch cast iron feed pipe to the bottom of the river, keeps the water in the well constantly same elevation as the river. Although zero weather occurred during the winter, the temperature well was never low enough to cause the water to freeze.

Adams River—Automatic Water Stage Register.

Photograph by Eyre M.

The Gurley Automatic Gauge shown in this photograph is so well known to engineers as to req little explanation. A float suspended from a copper ribbon passes over a drum which indicates height of water surface. The clock and paper winding apparatus are actuated by weights, and the and gauge height (to hundredths of feet) are printed every fifteen minutes. The gauge and clock will without attention for thirty days.

DISCHARGE MEASUREMENTS of Adams River near Adams Lake, for 1914.

Date.	Hydrographer.	Meter No	Width	Area of Section.	Mean Velocity.	Gauge Height	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
July 3	E. H. Tredcroft	1,923	443·0	2,354·0	2·41	4·7	5,650·0

Station rated 1911 and 1912. Gauge height in terms of newly installed automatic gauge, 5·41

DAILY GAUGE HEIGHT AND DISCHARGE of Adams River near Adams River Lumber Co's. Dam, for 1914.

Day.	January.		February.		March.		April.		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·25	1,060	2·55	1,282	2·66	1,368	4·30	3,370	4·20	3,175	5·01	5,139
2	2·25	1,060	2·55	1,282	2·66	1,368	4·30	3,370	4·20	3,175	5·11	5,430
3	2·25	1,060	2·55	1,282	2·55	1,282	4·30	3,370	4·30	3,370	5·11	5,430
4	2·25	1,060	2·55	1,282	2·55	1,282	4·40	3,575	4·30	3,370	5·11	5,430
5	2·25	1,060	2·45	1,207	2·55	1,282	4·40	3,575	4·30	3,370	5·11	5,430
6	2·25	1,060	2·45	1,207	2·55	1,282	4·40	3,575	4·40	3,575	5·11	5,430
7	2·15	990	2·45	1,207	2·55	1,282	4·40	3,575	4·40	3,575	5·21	5,730
8	2·15	990	2·45	1,207	2·55	1,282	4·50	3,810	4·40	3,575	5·21	5,730
9	2·15	990	2·45	1,207	2·55	1,282	4·50	3,810	4·40	3,575	5·21	5,730
10	2·15	990	2·45	1,207	2·55	1,282	4·50	3,810	4·50	3,810	5·21	5,730
11	2·15	990	2·45	1,207	2·55	1,282	4·50	3,810	4·50	3,810	5·21	5,730
12	2·15	990	2·45	1,207	2·55	1,282	4·50	3,810	4·50	3,810	5·21	5,730
13	2·15	990	2·45	1,207	2·55	1,282	1·84	786	4·60	4,050	5·21	5,730
14	2·15	990	2·45	1,207	2·55	1,282	1·84	786	4·60	4,050	5·21	5,730
15	3·07	1,704	2·45	1,207	2·55	1,282	1·84	786	4·60	4,050	5·31	6,030
16	3·07	1,704	2·45	1,207	0·15	105	1·84	786	4·60	4,050	5·31	6,030
17	3·07	1,704	2·66	1,368	0·15	105	1·95	857	4·70	4,300	5·31	6,030
18	3·07	1,704	2·66	1,368	0·15	105	1·95	857	4·81	4,587	5·31	6,030
19	2·96	1,611	2·66	1,368	0·15	105	1·95	857	4·81	4,587	5·31	6,030
20	2·96	1,611	2·66	1,368	0·25	125	2·05	922	4·91	4,858	5·31	6,030
21	2·96	1,611	2·66	1,368	0·25	125	4·30	3,370	4·91	4,858	5·31	6,030
22	2·86	1,528	2·66	1,368	0·25	125	4·30	3,370	5·01	5,139	5·31	6,030
23	2·86	1,528	2·66	1,368	0·25	125	4·30	3,370	5·01	5,139	5·41	6,330
24	2·86	1,528	2·63	1,368	0·25	125	4·20	3,175	5·11	5,430	5·41	6,330
25	2·86	1,528	2·66	1,368	0·25	125	4·20	3,175	5·11	5,430	5·41	6,330
26	2·86	1,528	2·66	1,368	0·25	125	4·20	3,175	5·11	5,430	5·41	6,330
27	2·86	1,528	2·66	1,368	0·25	125	4·20	3,175	5·31	6,030	5·41	6,330
28	2·65	1,360	2·66	1,368	0·35	145	4·10	3,000	5·31	6,030	5·41	6,330
29	2·65	1,360	......	......	0·35	145	4·10	3,000	5·21	5,730	5·41	6,330
30	2·65	1,360	......	......	0·35	145	4·20	3,175	5·11	5,430	5·41	6,330
31	2·65	1,360	...		0·35	145			5·01	5,139		..

DAILY GAUGE HEIGHT AND DISCHARGE of Adams River near Adams Rive Lumber Co's. Dam, for 1914.

Day.	July.		August.		September.		October.		November.		Decembe	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Di- charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.
1	5·41	6,330	3·59	2,248		4,830	......	962	4·19	3,157	2·71	1,408
2	5·41	6,330	3·59	2,248	......	4,830	....	962	4·16	3,105	2·70	1,400
3	5·31	6,030	3·59	2,248	......	4,830	....	1,025	3·53	2,176	2·69	1,392
4	5·31	6,030	3·59	2,248	......	4,830		1,025	3·69	2,373	2·69	1,392
5	5·31	6,030	3·59	2,249	......	4,830	2·30	1,095	3·81	2,539	2·67	1,376
6	4·91	4,858	3·59	2,248		5,110	2·35	1,132	4·23	3,233	2·66	1,368
7	4·91	4,858	3·59	2,248		5,110	3·07	1,704	4·51	3,834	2·64	1,352
8	4·91	4,858	3·59	2,248		5,110	3·76	2,469	3·89	2,656	2·62	1,336
9	4·91	4,858	3·59	2,248		5,110	2·35	1,132	4·20	3,175	2·60	1,320
10	5·01	5,139				5,110	2·3	1,095	3·92	2,702	2·57	1,297
11	5·01	5,139				5,110	1·44	570	3·91	2,686	2·55	1,282
12	5·01	5,139	.....			5,110	4·50	3,810	3·86	2,612	2·52	1,260
13	5·01	5,139			5·01	5,139	4·70	3,370	3·83	2,568	2·51	1,252
14	5·01	5,139				2,176	4·50	3,370	3·83	1,940	2·49	1,237
15	5·01	5,139			2·12	969	3·90	2,670	2·93	1,585	2·47	1,222
16	5·01	5,139					3·80	2,525	2·92	1,577	2·45	1,207
17	5·01	5,139					3·84	2,583	2·90	1,560	2·43	1,192
18	5·01	5,139					3·84	2,583	2·46	1,215	2·41	1,177
19	5·01	5,139					3·83	2,568	2·85	1,520	2·39	1,162
20	5·01	5,139					3·81	2,539	2·84	1,512	2·37	1,147
21	3·48	2,116					3·81	2,539	2·84	1,512	2·35	1,132
22	3·48	2,116					3·78	2,497	2·82	1,496	2·33	1,117
23	3·48	2,116					3·77	2,483	2·80	1,480	2·31	1,102
24	3·48	2,116					3·59	2,248	2·78	1,464	2·29	1,088
25	3·48	2,116	4·70	4,300				2,260	2·76	1,448	2·27	1,074
26	3·48	2,116		4,560				2,260	2·77	1,456	2·25	1,060
27	3·48	2,116		4,560			3·65	2,322	2·76	1,448	2·23	1,046
28	3·48	2,116		4 560			4·11	3,017	2·74	1,432	2·20	1,025
29	3·48	2,116		4,560			3·54	2,188	2·73	1,424	2·15	990
30	3·48	2,116		1,560			4·32	3,410	2·72	1,416	2·13	976
31	3·59	2,248		4,560			4·23	3,232				

MONTHLY DISCHARGE of Adams River near Adams Lake, for 1914.

(Drainage area, 1,600 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	To- acre-
January	1,704·0	990·0	1,307·0	0·81	0·94	8
February	1,368·0	1,207·0	1,287·0	0·80	0·83	7
March	1,368·0	105·0	690·0	0·43	0·50	42
April	3,810·0	786·0	2,736·0	1·71	1·90	162
May	6,030·0	3,175·0	4,403·0	2·75	3·17	27
June	6,330·0	5,139·0	5,900·0	3·68	4·11	35
July	6,330·0	2,116·0	4,197·0	2·62	3·02	25
October	3,810·0	570·0	2,182·0	1·36	1·57	134
November	3,834·0	1,215·0	2,077·0	1·29	1·44	12
December	1,408·0	976·0	1,213·0	0·75	0·87	74
The period	6,330·0	105·0	2,599·2	1·62	18·35	1,560

NOTE Summary is for a ten month period, omitting August and September, for which time it was imposs procure a gauge reader

Precipitation over the Adams river drainage area probably varies from 20 to 40 inches per annum, while large e tion losses occur on Adams lake

ASHNOLA RIVER, NEAR KEREMEOS (2065).

Location.—Near Ashnola, Water District No. 4.

Records Available.—June 27 to December 19, 1914.

Drainage Area.—Four hundred and eighty square miles.

Gauge.—Standard chain gauge read daily by H. Atherton.

Channel.—The channel is straight for about 100 yards above and below measuring section. Velocity is fairly high. The bed of the stream is composed of rocks and gravel. Only one channel at all stages. Average depth at high water, 5 feet.

Discharge Measurements.—Are made by wading at low water and by cable carrier at high water.

Winter Flow.—No records have been kept during winter months, but ice conditions are known to exist during January and February.

Accuracy.—The accuracy of returns is low, only three measurements having been obtained and these at low water.

ASHNOLA RIVER.

Ashnola river is the largest tributary of the Similkameen below Princeton. It rises in the high mountains of the Cascade range south of the boundary, and joins the Similkameen at Ashnola half-way between Hedley and Keremeos, and has a total length of about 40 miles. It has a number of small tributaries from the surrounding mountains, the largest of which is the East Fork from the south, which joins it 5 miles from the mouth. The other tributaries, six in number, are small unnamed creeks.

The drainage area from the 1912 map of the Department of Lands of British Columbia is 480 square miles.

The river and its tributaries flow through deep narrow valleys with steep slopes on both sides, like all streams in this district. Little is known of the headwaters of this river, as the upper part of its course is difficult of access.

The precipitation at the mouth is about 10 inches per annum. Water is taken from Ashnola river by the South Keremeos Land Company for use on the ranches in the neighbourhood of Keremeos, 10 miles away on the north side of the Similkameen river. The water runs in an earth ditch most of the way. It crosses the Similkameen at Ashnola in a 40-inch wood stave pipe supported on the highway bridge at this point. Ashnola river at low stages carries more than this system can carry. Discharge records of the river taken by this survey in 1914 show a minimum flow of 65 c.f.s. on August 25. The maximum flow is over 1000 c.f.s. With storage there is sufficient water in the river to irrigate large areas of land in the Similkameen valley below Keremeos.

DISCHARGE MEASUREMENTS of Ashnola River near Ashnola, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft per sec	Feet	Sec.-ft.
Ju 28	K. G. Chisholm	1,913	57·0	111·0	1·73	−0·10	192·0
A 1	"	1,913	41·0	46·0	1·54	−0·61	71·0
D 1	"	1,673	40·0	50·0	1·36	−0·53	68·0

ffort will be made to completely rate this station during 1915.

DAILY GAUGE HEIGHT AND DISCHARGE of Ashnola River near Keremeos, for 1914.

Day.	June.	
	Gauge Height	Dis-charge
	Feet.	Sec.-ft.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28	1·50	[illegible]
29		
30	1·60	[illegible]
31		

DAILY GAUGE HEIGHT AND DISCHARGE of Ashnola River near Keremeos, for 1914.

Day.	July.		August.		September.		October.		November		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet	Sec -ft	Feet.	Sec.-ft.
1			−0·35	119	−0·7	49	−0·2	160			−0·6	65
2	1·50	876										
3					−0·7	[illegible]	−0·27	140	−0·32	127	−0·55	74
4	1·40	828	−0·35	119								
5					−0·7	49			−0·30	132	−0·40	107
6			−0·35	119			−0·25	146				
7	1·25	757							−0·30	132		
8			−0·35	119	−0·5	84	−0·25	146			−0·30	132
9	09·5	620										
10					−0·4	107	−0·30	132	−0·35	119	−0·25	146
11	0·85	576	−0·40	107								
12					−0·45	95			−0·40	107	−0·15	176
13			−0·45	95			−0·20	160				
14	1·05	665							−0·45	95		
15			−0·40	107	−0·45	95	−0·12	186			+0·10	263
16	0·90	598										
17					−0·45	95	−0·15	176	−0·45	95	+0·20	301
18	0·55	446	−0·33	119								
19					−0·05	84			−0·45	95	+0·30	340
20			−0 45	95			−0·25	146				
21	0·35	361							−0·30	132		
22			−0·50	84	−0·12	186	−0·30	132				
23	0·22	308										
24					−0·20	160	−0·30	132	−0·40	107		
25	0·15	282	−0·60	65								
26					−0·30	132			−0·40	107		
27			−0·65	57			−0·25	146				
28	0·05	244							−0·45	95		
29			−0·60	65	−0·15	176	−0·25	146				
30	0	226										
31							−0·30	132				

MONTHLY DISCHARGE of Ashnola River near Keremeos, for 1914.

(Drainage area, 480 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.
June	925	876	(for period	June 27 to	June 30)	
July	876	226	522	1·1	1·3	32,097
August	119	57	97·7	0·2	0·2	6,007
September	186	49	104·3	0·2	0·2	6 206
October	186	132	148·6	0·3	0·3	9,137
November	132	95	111·9	0·2	0·2	6,658
December	340	65	(for period	Dec. 1 to	Dec. 19)	
The period	876	49	196·9	0·4	2·2	60,105

NOTE.—Station established in latter end of June, 1914.

BOUNDARY CREEK (2048).

Location.—At Greenwood, Water District No. 4.

Records Available.—January 1 to December 7, 1914.

Drainage Area.—One hundred and twenty-five square miles.

Gauge.—Vertical staff gauge graduated in feet and tenths, situated on upstream side of traffic bridge, read daily by P. H. McCarrach.

Channel.—Channel is straight for about 300 feet above and below measuring section. Bed of stream is rocky and permanent.

Discharge Measurements.—Four discharge measurements have been obtained during 1914 at varying stages.

Winter Flow.—No records have been kept on this stream during winter months, but ice conditions are known to exist during January and February.

Accuracy.—The accuracy of results is considered good, and should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Boundary Creek at Greenwood, B.C., 1914.

Date	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 20	E. Richardson and C. Varcoe	1527	41·5	99·8	3·8	2·9	379
June 8	E. M. Dann and K. Chisholm	1913	39·0	84·0	3·2	2·5	269
July 20	" " "	1913	39·0	41·0	1·28	1·21	52·
Aug. 26	" " "	1913	17·0	15·6	0·77	0·77	12·

DAILY GAUGE HEIGHT AND DISCHARGE of Boundary Creek near Greenwood, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft.
1	0·90	20	0·90	20	0·90	20	1·20	45	2·90	380	2·80	352
2	0·90	20	.....		0·90	20	1·20	45	3·35	504	2·90	380
3	0·90	20			0·90	20	1·30	55	3·50	546	3·30	491
4	0·90	20			0·90	20	1·40	66	3·30	491	3·00	407
5	0·90	20			0·90	20	1·50	78	3·20	463	3·00	407
6	0·90	20			0·90	20	1·60	90	3·00	407	2·80	352
7	1·00	28			0·90	20	1·80	117	2·90	380	2·70	325
8	1·00	28			0·90	20	2·00	150	2·90	380	2·60	297
9	1·00	28			0·90	20	2·10	170	3·00	407	2·60	297
10	1·00	28			0·90	20	2·25	204	3·00	407	2·50	270
11	0·95	24			0·90	20	2·60	297	3·00	407	2·50	270
12	0·90	20	0·90	20	0·90	20	2·80	352	3·10	435	2·40	243
13	0·90	20	0·90	20	0·90	20	2·90	380	3·15	449	2·40	243
14	0·90	20	0·90	20	0·95	24	3·00	407	3·20	463	2·50	270
15	0·90	20	0·90	20	0·95	24	3·40	518	3·40	518	2·60	297
16	0·90	20	0·90	20	1·00	28	3·45	532	3·55	559	2·70	325
17	0·90	20	0·90	20	1·00	28	3·55	560	3·20	463	2·80	352
18	0·90	20	0·90	20	1·00	28	3·40	518	3·00	407	2·80	352
19	0·90	20	0·90	20	1·00	28	3·40	518	3·00	407	2·70	325
20	0·90	20	0·90	20	1·10	36	3·50	546	3·00	407	2·50	270
21	0·90	20	0·90	20	1·10	36	3·30	491	3·00	407	2·40	243
22	0·90	20	0·90	20	1·10	36	3·20	463	3·00	407	2·30	217
23	0·90	20	0·90	20	1·10	36	3·20	463	3·30	491	2·10	170
24	1·00	28	0·90	20	1·20	45	3·30	491	3·30	491	2·10	170
25	0·90	20	0·90	20	1·20	45	3·20	463	3·30	491	2·10	170
26	0·90	20	0·90	20	1·15	40	3·10	435	2·95	394	2·00	150
27	0·90	20	0·90	20	1·20	45	3·10	435	2·90	380	2·00	150
28	0·90	20	0·90	20	1·20	45	3·00	407	2·80	352	1·90	133
29	0·90	20			1·20	45	2·90	380	2·70	325	1·90	133
30	0·90	20			1·20	45	2·90	380	2·70	325	1·90	133
31	0·90	20			1·20	45			2·70	325		....

Daily Gauge Height and Discharge of Boundary Creek near Greenwood, for 1914.

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft.	F[illegible].	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	1·90	133	1·00	28	0·40	2	0·90	20	1·15	40	1·10	36
2	1·80	117	1·00	28	0·40	2	0·85	17	1·15	40	1·10	36
3	1·90	133	1·00	28	0·40	2	0·85	17	1·20	45	1·01	36
4	1·80	117	0·90	20	0·40	2	0·85	17	1·20	45	1·10	36
5	1·70	103	0·90	20	0·40	2	0·85	17	1·20	45	1·05	32
6	1·70	103	0·90	20	0·40	2	0·80	14	1·20	45	1·05	32
7	1·60	90	0·90	20	0·40	2	0·80	14	1·20	45	1·05	32
8	1·60	90	0·90	20	0·60	5	0·80	14	1·20	45	......	..
9	1·50	78	0·90	20	0·60	5	0·80	14	1·20	45	......	..
10	1·50	78	0·90	20	0·60	5	0·80	14	1·15	40	......	..
11	1·40	66	0·80	14	0·60	5	0·90	20	1·10	36	......	..
12	1·40	66	0·80	14	0·50	3	0·90	20	1·10	36	......	..
13	1·40	66	0·80	14	0·50	3	0·90	20	1·20	45	......	..
14	1·40	66	0·80	14	0·55	4	0·90	20	1·20	45	......	..
15	1·40	66	0·80	14	0·70	9	0·90	20	1·20	45	......	..
16	1·30	55	0·80	14	0·70	9	0·90	20	1·15	40	......	..
17	1·30	55	0·80	14	0·70	9	0·95	24	1·15	40	......	..
18	1·25	50	0·70	9	0·70	9	1·00	28	1·15	40	......	..
19	1·20	45	0·70	9	0·75	11	1·00	28	1·20	45	......	..
20	1·20	45	0·70	9	0·80	14	1·00	28	1·20	45	......	..
21	1·20	45	0·70	9	0·80	14	1·00	28	1·20	45	......	..
22	1·20	45	0·70	9	0·80	14	1·00	28	1·20	45	......	..
23	1·20	45	0·60	5	0·80	14	1·00	28	1·20	45	......	..
24	1·20	45	0·60	5	0·80	14	1·00	28	1·15	40	......	..
25	1·20	45	0·60	5	0·70	9	1·00	28	1·15	40	......	..
26	1·10	36	0·60	5	0·70	9	1·00	28	1·15	40	......	..
27	1·10	36	0·50	3	0·90	20	1·00	28	1·15	40	......	..
28	1·10	36	0·50	3	1·00	28	1·05	32	1·15	40	......	..
29	1·00	28	0·50	3	0·95	24	1·05	32	1·15	40	......	..
30	1·00	28	0·50	3	0·90	20	1·10	36	1·15	40	......	..
31	1·00	28	0·50	3	......	....	1·15	40	......	......	......	

Monthly Discharge of Boundary Creek near Greenwood, for 1914.

(Drainage area, 125 square miles.)

Month.	Discharge in Second-Feet.				Run-Off	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage	Total in acre-fe
January	28	20	21·4	0·17	0·19	1
February	20	20	20·0	0·16	0·17	1
March	45	20	29·7	0·24	0·28	1
April	560	45	335·2	2·68	2·99	19
May	559	325	428	3·4	3·9	26
June	491	133	273	2·18	2·43	16
July	133	28	66	0·53	0·61	4
August	28	3	13	0·10	0·11	
September	28	2	9	0·07	0·08	
October	40	14	23	0·18	0·21	1
November	45	36	42	0·33	0·37	2
December	36	32	(For period Dec. 1 to Dec. 7.)			
The year	560	2	107	0·84 (estimated)	11·6	7 (estima

NOTE.—Winter conditions obtained after December 7.

From October 1, 1912, to September 30, 1913, precipitation at Greenwood was 14·7 inches. This is probably somew lower than the mean annual precipitation over the whole drainage area.

CELESTE CREEK (2050).

Location.—Near Albas, Water District No. 2.

Drainage Area.—Eighty square miles.

Records Available.—March 1 to December 31, 1914.

Gauge.—Standard vertical staff gauge, graduated in feet and tenths. Read by H. C. Harris three times per week.

Channel.—Average width 25 feet. Bed of stream very rocky.

Discharge Measurements.—Two meterings only have been obtained.

Winter Flow.—Creek generally freezes over during winter months.

Accuracy—The results as shown are very approximate, since it has been impossible to rate the station completely during 1914.

DISCHARGE MEASUREMENTS OF CELESTE Creek near Albas, B.C., 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Aug. 13	E. H. Tredcroft & K. Chisholm	1923	32	37·0	1·47	0·58	54·7
Aug. 29	E. M. Dann	1913	19	15·4	1·5	0·35	23·4

Measurements made at stream's mouth, regular section not suitable for low water.
An effort will be made to completely rate this station during 1915.

DAILY GAUGE HEIGHT AND DISCHARGE of Celeste Creek, near Shuswap Lake, for 1914.

Day.	February.		March.		April.		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0·65	66					1·95	335
2					0·70	75	1·75	289		
3			0·65	66					2·15	382
4					0·75	83	1·85	312		
5			0·65	66					2·15	382
6					0·75	83	1·95	335		
7			0·65	66					2·05	359
8					0·80	92	1·95	335		
9										
10			0·65	66					2·10	370
11					0·85	101	2·00	347		
12			0·65	66					2·05	359
13							2·25	405		
14			0·65	66	0·95	120				
15							2·35	429	2·05	359
16			0·65	66	1·00	130				
17										
18					1·15	160	2·35	429	2·10	370
19			0·65	66						
20					1·25	181	2·35	429	2·00	347
21			0·65	66						
22	0·65	66			1·30	191				
23			0·65	66			2·25	405	1·90	324
24					1·80	300				
25	0·65	66					2·25	405		
26			0·65	66					1·80	300
27					1·65	267				
28	0·65	66	0·65	66			2·15	382		
29										
30					1·65	267	2·15	382	1·80	300
31			0·70	75						

DAILY GAUGE HEIGHT AND DISCHARGE of Celeste Creek, near Shuswap Lake, for 1914.

Day	July.		August.		September		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft
1												
2					0·30	18	0·50	43	1·00	130	0·85	101
3	1·70	278	0·70	75								
4					0·27	15			1·10	150	0·85	101
5			0·70	75			0·50	43				
6	1·55	245			0·25	13			1·05	140		
7			0·65	66			0·50	43			0·85	101
8					0·30	18			1·05	140		
9	1·35	202	0·65	66			0·50	43			0·85	101
10									1·00	130		
11	1·25	181			0·22	10	0·60	58			0·80	92
12			0·65	66					1·00	130		
13	1·15	160					0·70	75			0·75	83
14			0·65	66	0·20	9			1·00	130		
15	1·30	191					0·90	110			0·70	75
16			0·55	50					0·95	120		
17					0·20	9	1·00	130			0·70	75
18	1·20	170	0·50	43					0·90	110		
19					0·25	12	1·10	150			0·65	66
20									0·85	101		
21	1·10	150	0·50	43	0·30	18	1·05	140				
22									0·80	92	0·65	66
23	1·00	130			0·35	23	1·00	130				
24			0·45	36					0·75	83	0·60	58
25	0·95	120										
26					0·40	29	1·00	130	0·75	83	0·60	58
27	0·90	110	0·35	23								
28					0·45	36	0·95	120	0·70	75	0·60	58
29			0·35	23								
30	0·80	92			0·45	36	0·90	110	0·80	92	0·60	58
31			0·30	18								

MONTHLY DISCHARGE of Celeste Creek near Shuswap Lake, for 1914.

(Drainage area, 80 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre feet.
rch	75	66	66·6	0·8	0·9	4,095
	300	75	157·7	1·9	2·1	2,384
	429	289	375·7	4·7	5·4	23,100
	382	300	349·0	4·3	4·8	20,767
	278	92	169·0	2·1	2·4	10,391
ust	75	18	50·0	0·6	0·7	3,074
tember	36	9	19·0	0·2	0·2	1,130
ober	130	43	94·6	1·2	1·4	5,817
cember	150	75	113·7	1·4	1·6	6,763
ember	101	58	78·0	1·0	1·1	4,796
period	429	9	147·3	1·8	20·6	83,317

NOTE.—Mean annual precipitation probably varies from 30 to 50 inches. Probably there are large evaporation losses Hum-a-milt lake.

CRAZY CREEK (2051).

Location.—Section 28, township 23, range 5, west of the 6th meridian.

Drainage Area.—Forty-five square miles.

Records Available.—March 8, to December 13, 1914.

Gauge.—Standard vertical staff gauge situated on C.P.R. siding bridge.

Channel.—The channel averages about 75 feet in width. Bed of stream is rocky, and velocities are high.

Winter Flow.—Ice conditions exist on this stream during November, December, January and February.

Accuracy.—The accuracy of returns is considered on the whole to be fairly high. Four discharge measurements have been obtained at varying stages, and the curve is well defined.

Miscellaneous.—The British Columbia Forest Mills Co., Ltd., hold records on this stream for 9 cubic feet per second. The water is used to run a small hydro-electric plant comprising : One Pelton bucket wheel and one Can. Gen. Electric dynamo (2,000 volts, 50 amps), replaced during winter months by steam plant for purpose of operating saw-mill.

DISCHARGE MEASUREMENTS of Crazy Creek at Taft, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Oct. 25	E. M. Dann and K. G. Chisholm	1055	46	57·8	2·05	1·60	118·[illegible]
1914.							
Mar. 3	K. G. Chisholm	1505	33	21·8	1·11	0·72	24·[illegible]
May 18	E. H. Tredcroft	1055	77	124·7	3·0	2·30	370·7
July 15	E. H. Tredcroft	1923	78·5	151·2	4·09	2·80	619·5

DAILY GAUGE HEIGHT AND DISCHARGE of Crazy Creek near Taft, B.C., for 1914.

Day.	March.		April.		May.		June	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.
1			1·00	35	2·00	242	2·30	371
2			0·90	29	2·40	417	2·60	517
3			1·00	35	2·50	467	3·00	722
4			1·10	43	2·25	348	2·[illegible]	517
5			1·40	82	2·00	242	2·35	[illegible]
6			1·60	118	1·90	205	2·30	371
7			1·75	158	1·90	205	2·00	[illegible]
8	0·60	24	1·80	173	[illegible]	205	2·00	[illegible]
9	0·75	25	1·80	173	2·10	282	2·10	282
10	0·60	24	1·80	173	2·25	348	2·20	325
11	0·70	25	1·85	189	2·20	325	2·40	417
12	0·80	26	1·90	205	2·30	371	2·35	394
13	0·85	28	2·00	242	2·40	417	2·50	467
14	0·80	26	2·05	262	2·65	542	2·60	517
15	0·85	28	2·15	303	2·60	517	2·65	542
16	0·85	28	2·20	325	2·65	542	2·70	567
17	0·80	26	2·00	242	2·60	517	2·75	593
18	0·95	32	1·90	205	2·30	371	2·70	567
19	0·90	29	2·00	242	2·25	348	2·50	467
20	0·95	32	2·10	282	2·20	325	2·35	394
21	1·00	35	2·00	242	2·30	371	2·15	[illegible]
22	1·10	43	1·90	205	2·40	417	2·10	[illegible]
23	1·10	43	1·80	173	2·55	492	2·10	[illegible]
24	1·20	53	1·90	205	2·65	542	2·15	[illegible]
25	1·10	43	1·80	173	2·50	467	2·20	325
26	0·60	24	1·80	173	2·35	394	2·50	467
27	0·65	24	1·80	173	2·10	282	2·35	394
28	0·70	25	1·80	173	2·[illegible]	242	2·25	348
29	0·90	29	1·75	158	1·90	205	2·30	371
30	1·00	35	1·80	173	1·[illegible]	173	2·30	371
31	1·10	43			1·95	223	....	....

DAILY GAUGE HEIGHT AND DISCHARGE of Crazy Creek near Taft, B.C., for 1914

Day.	July.		August.		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Di-charg
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec. ft
1	2·35	394	1·40	82	0·80	26	1·60	118	1·45	90	1·30	
2	2·45	442	1·30	67	0·80	26	1·55	108	1·85	189	1·25	
3	2·40	417	1·30	67	[illegible]	26	1·40	82	1·65	131	1·20	
4	2·45	442	1·30	67	0·80	26	1·40	82	1·55	108	1·20	
5	2·30	371	1·25	60	0·80	26	1·30	67	1·50	98	1·15	
6	2·20	325	1·20	53	0·75	25	1·25	60	1·50	98	1·15	
7	2·10	282	1·20	53	0·75	25	1·20	53	1·45	90	1·10	
8	2·00	242	1·30	67	0·90	29	1·10	43	1·40	82	1·10	
9	2·00	242	1·20	53	1·30	67	1·10	43	1·40	82	1·10	
10	2·00	242	1·15	48	1·00	35	1·10	43	1·40	82	1·10	
11	2·05	262	1·10	43	0·95	32	1·10	43	1·50	98	1·00	
12	2·10	282	1·10	43	1·00	35	1·10	43	1·50	98	1·00	
13	2·10	282	1·10	43	1·05	39	1·10	43	1·45	90	1·00	
14	2·57	502	1·05	39	1·10	43	1·10	43	1·40	82		
15	2·80	619	1·05	39	1·00	35	1·05	39	1·30	67		
16	2·20	325	1·05	39	0·90	29	1·00	35	1·25	60		
17	1·95	223	1·10	43	0·90	29	1·40	82	1·20	53		
18	1·90	208	1·05	39	0·90	29	1·[illegible]	90	1·20	53		
19	1·80	173	1·00	35	1·40	82	1·45	90	1·20	53		
20	1·80	173	1·00	35	1·30	67	1·40	82	1·15	48		
21	1·75	158	1·00	35	1·20	53	1·40	82	1·10	43		
22	1·60	118	1·00	35	1·10	43	1·40	82	1·10	43		
23	1·50	98	1·00	35	0·95	32	1·35	74	1·10	43		
24	1·50	98	1·00	35	0·95	32	1·35	74	1·20	53		
25	1·50	98	0·90	29	0·90	29	1·30	67	1·20	53		
26	1·50	98	0·90	29	0·90	29	1·25	60	1·20	53		
27	1·50	98	0·90	29	1·85	189	1·25	60	1·20	53		
28	1·45	90	0·85	28	1·60	118	1·20	53	1·40	82		
29	1·40	82	0·80	26	1·50	98	1·10	43	1·40	82		
30	1·40	82	0·80	26	1·50	98	1·10	43	1·35	74		
31	1·40	82	0·80	26			1·40	82				

MONTHLY DISCHARGE of Crazy Creek at Taft, B.C., for 1914.

(Drainage area, 45 square miles.)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-fe
March	53	24	31·7	0·7	0·8	1
April	325	29	178·8	3·97	4·43	10
May	542	173	356·2	7·90	9·10	21
June	722	242	411·8	9·10	10·10	25
July	619	82	243·4	5·40	6·20	14
August	82	26	43·0	0·95	1·09	2
September	189	25	48·4	1·07	1·19	2
October	118	43	65·0	1·40	1·60	3
November	189	43	78·0	1·70	1·90	4
December	67	35	for period	December	1 to Decem	ber 13
The period	722	24	161·8	3·57	36·41	[illegible]

NOTE — Winter conditions obtained after December 13.

The mean annual precipitation at Revelstoke is given as 42·99 inches (Meteorological Service, Department of Ma and Fisheries) which is probably slightly less than the precipitation over the Crazy creek drainage area.

The gauge reader, Mr. J. Lidstone, states that from his observation of the amount of snow on hills during the wi of 1913-14 that the total run-off of the stream during 1914 is about 33 per cent less than in average years.

EAGLE RIVER, AT MALAKWA, (2010).

Location.—Section 9, township 23, range 6, west 6th meridian.

Records Available.—May 14 to December 31, 1913; January 8, to December 12, 1914.

Drainage Area.—Four hundred and twenty square miles.

Gauge.—Standard chain gauge situated on highway bridge and read daily by P. C. Cold.

Channel.—The channel is uniform and straight for 100 yards above and below the gauge.

Discharge Measurements.—Are made from upstream side of highway bridge. Velocities are uniform and not too high.

Winter Flow.—Partial ice conditions exist on the river during January and February.

Accuracy.—The accuracy of results is considered to be very high, nine measurements have been obtained at varying stages, but during March, April, and May, 1914, gauge readings were not considered to be very reliable.

DISCHARGE MEASUREMENTS of Eagle River at Malakwa, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft per sec.	Feet.	Sec.-ft.
1913.							
Nov. 7	E. M. Dana & K. G. Chisholm	1,505	111·0	434·0	1·36	2·61	620·0
1914.							
Mar. 3	K. G. Chisholm	1,505	125·0	206·5	1·24	1·80	257·0
May 28	E. H. Tredcroft	1,055	111·0	717·7	3·98	4·90	2,860·0
July 16	"	1,923	119·5	718·7	4·14	5·05	2,972·0

See measurements of Eagle river in Water Resources Paper Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Eagle River near Malakwa, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft
1	.	320	2·00	320	1·80	256	2·25	422	4·50	2,285	6·60	6,500
2		320	1·95	302	1·80	256	2·20	400	5·20	3,280	6·30	5,655
3		320	1·95	302	1·80	256	2·25	422	5·20	3,280	6·20	5,400
4		355	1·95	302	1·80	[illegible]	2·35	470	5·10	3,125	5·30	3,460
5	.	355	1·85	270	1·80	256	2·80	725	4·70	2,550	5·05	3,047
6		355	. .	270	1·80	256	3·05	904	4·45	2,225	5·00	2,970
7		400	.	270	1·80	[illegible]	3·35	1,127	4·30	2,050	4·90	2,825
8	2·20	400	.	270	1·70	225	3·55	1,292	4·45	2,225	4·55	[illegible]
9	2·25	422		256	1·75	240	3·65	1,380	4·65	2,482	4·65	2,482
10	2·20	400		[illegible]	1·75	240	3·70	1,425	5·00	2,970	5·30	[illegible]
11	2·20	400	.	256	1·80	256	3·75	1,472	..	..	[illegible]·40	3,645
12	2·20	400	.	256	1·80	256	3·85	1,570	.. .		5·45	3,737
13	2·15	377	.	256	1·90	285	4·20	1,935			5·90	4,655
14	2·10	355		256	1·90	285	4·20	1,935	.		6·10	5,145
15	2·10	355		256	1·95	302	4·50	2,285			6·65	[illegible]
16	2·10	355	.	256	1·95	302	4·50	2,285			6·25	5,527
17	2·10	355	.	256	1·95	302	4·30	2,050	5·60	4,025	6·40	5,925
18	2·10	355		256	2·05	337	4·15	1,880		4,025	6·70	6,800
19	2·15	377	.. .	270	2·05	337	4·35	2,107	5·00	2,970	6·00	4,900
20	2·20	400		270	2·10	355	4·45	2,225	4·95	2,897	5·60	[illegible]
21	2·10	355		270	2·20	400	4·30	2,050	5·15	3,202	5·15	[illegible]
22	2·10	355	1·85	270	2·25	422	4·20	1,935	5·30	3,460	5·00	[illegible]
23	2·10	355	1·80	256	2·30	445	3·95	1,670	5·33	3,552	4·90	2,825
24	2·10	355	1·80	256	2·30	445	4·00	1,720	5·40	3,645	4·85	[illegible]
25	2·10	355	1·85	270	2·20	400	4·00	1,720	5·55	3,927	5·10	3,125
26	.. .	337	1·80	256	2·25	422	3·95	1,670			5·55	3,927
27	2·05	337	1·80	256	2·30	445	3·90	1,620			5·35	[illegible]
28	2·00	320	1·80	256	2·20	400	4·20	1,935	4·40	2,165	5·30	3,460
29	2·10	355	. .	.	2·20	400	4·30	2,050			5·20	[illegible]
30	2·10	355	. .		2·20	400	4·35	2,107			5·40	3,645
31	2·15	377			2·25	422						

DAILY GAUGE HEIGHT AND DISCHARGE of Eagle River near Malakwa, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis charge	Gauge Height.	Dis charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5·55	3,927	3·50	1,250	2·60	605	3·30	1,090	3·20	1,015	2·60	605
2	5·85	4,542	3·50	1,250	2·60	605	3·25	1,052	3·90	1,620	2·55	577
3	5·80	4,430	3·55	1,292	2·65	632	3·10	940	3·60	1,335	2·60	605
4	5·70	4,225	3·50	1,250	2·65	632	2·90	795	3·45	1,207	2·45	522
5	5·40	3,645	3·30	1,090	2·60	605	2·95	830	3·40	1,165	2·30	445
6	5·20	3,280	3·40	1,165	2·40	495	2·80	725	3·35	1,127	2·40	495
7	5·05	3,047	3·30	1,090	2·60	605	2·80	725	3·20	1,015	2·30	445
8	4·95	2,897	3·30	1,090	2·90	795	2·70	660	3·30	1,090	2·20	400
9	4·85	2,755	3·20	1,015	2·90	795	2·70	660	3·15	977	2·30	445
10	4·90	2,825	3·00	865	2·60	605	2·60	[illegible]	3·05	902	2·10	355
11	5·00	2,970	2·90	795	2·75	692	2·60	605	3·10	940	2·20	400
12	5·10	3,125	3·10	940	2·65	632	2·60	605	3·00	865	2·10	355
13	5·00	2,970	2·90	795	2·55	577	2·60	605	2·80	725		
14	5·50	3,830	3·00	865	2·60	605	2·55	577	2·70	660		
15	6·65	6,650	3·05	902	2·40	495	2·50	550	2·60	605		
16	5·10	3,125	3·00	865	2·30	445	2·65	632	2·50	550		
17	4·50	2,285	2·90	795	2·35	470	3·90	1,620	2·50	550		
18	4·40	2,165	2·95	830	2·70	660	3·70	1,425	2·55	577		
19	4·40	2,165	2·95	830	3·40	1,165	3·65	1,380	2·40	495		
20	4·60	2,415	3·00	865	3·00	865	3·50	1,250	2·40	495		
21	4·00	1,720	3·00	865	2·85	760	3·25	1,052	2·35	470		
22	3·75	1,472	2·90	795	2·80	725	3·10	940	2·30	445		
23	3·60	1,335	2·90	795	2·80	725	3·00	865	2·25	422		
24	3·60	1,335	2·70	660	2·90	795	2·90	795	2·30	445		
25	3·60	1,335	2·80	725	2·90	795	2·80	725	2·50	550		
26	3·50	1,250	2·70	660	2·95	830	2·80	725	2·60	605		
27	3·40	1,165	2·80	725	4·30	2,050	2·75	692	2·60	605		
28	3·30	1,090	2·80	725	3·45	1,207	2·70	660	2·80	725		
29	3·30	1,090	2·75	692	3·35	1,127	2·70	660	2·80	725		
30	3·40	1,165	2·70	660	3·30	1,090	2·90	795	2·70	660		
31	3·65	1,380	2·[illegible]	632			3·30	1,090				

MONTHLY DISCHARGE of Eagle River near Malakwa, for 1914.

(Drainage area, 420 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
	422	320	362	0·9	1·0	22,277
ary	320	256	268	0·6	0·7	14,844
	445	225	326	0·8	0·9	20,063
	2,285	400	1,559	3·7	4·1	92,806
	4,025	2,050	(For period	of 20 days).		
	6,800	2,350	4,063	9·7	10·8	250,000
	6,650	1,090	2,632	6·3	7·3	161,871
	1,292	632	896	2·1	2·4	55,093
ber	2,050	445	769	1·8	2·0	45,783
er	1,620	550	849	2·0	2·3	52,200
mber	1,620	422	785	1·9	2·1	46,700
mber	605	355	(for period	Dec. 1st to	Dec. 12th).	
ear	6,800	225	1,332 (Estim	3·15 ated).	42·7	975,300 (Estimated)

OTE — During part of January and part of February the river was affected to a slight extent by ice. Consequently ords for these two months are less reliable than for the remainder of the year.

ing to the unreliability of gauge readings for a portion of May, it was thought best to leave that part of the month gauge readings and discharges being filled in only in those cases where reasonable reliance can be placed thereon.

GRANITE CREEK (2064).

Location.—Near Coalmont, Water District No. 4.

Records Available.—June 19 to December 31, 1914.

Drainage Area.—Forty square miles.

Gauge.—Standard vertical staff gauge graduated in feet and tenths, situated on footbridge. Read daily by Miss Emily Cook.

Channel.—Channel is straight for 100 feet above and 500 feet below measuring section. Velocity high. Bed of stream is composed of gravel and rock, considered permanent.

Discharge Measurements.—Four discharge measurements were obtained during 1914. Highest recorded flow 300 cubic feet per second.

Winter Flow.—No records have been obtained during winter months on this stream, but ice conditions are expected to prevail throughout January and February.

Accuracy.—The accuracy of returns will eventually be high, but several more measurements are required to define curve satisfactorily.

DISCHARGE MEASUREMENTS of Granite Creek near Coalmont, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet	Sec.-ft
June 18...	K. G. Chisholm..	1,913	68·0	92·0	3·26	2·22	300·0
July 25	"	1,913	27·0	44·0	0·70	1·32	[illegible]
Sept. 3. .	"	1,913	26·0	20·1	0·61	1·05	12·2
Nov. 26	"	1,913	37·0	[illegible]3·0	0·86	1·4	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Granite Creek near mouth, for 1914.

Day.	June.		July.		August.		September.		October.		November.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.
1	....	....	1·90	129	1·20	21	1·05	12	1·15	18	1·35	34
2	....	....	1·90	129	1·20	21	1·05	12	1·20	21	1·50	50
3	....	....	1·85	115	1·20	21	1·05	12	1·20	21	1·40	39
4	....	....	1·75	90	1·15	18	1·05	12	1·20	21	1·40	39
5	....	....	1·70	79	1·15	18	1·05	12	1·20	21	1·45	45
6	....	....	1·70	79	1·15	18	1·05	12	1·20	21	1·35	34
7	....	....	1·70	79	1·20	21	1·05	12	1·20	21	1·30	29
8	....	....	1·65	71	1·25	25	1·10	15	1·20	21	1·30	29
9	....	....	1·60	63	1·25	25	1·20	21	1·25	25	1·35	34
10	....	....	1·60	63	1·20	21	1·15	18	1·25	25	1·30	29
11	....	....	1·55	56	1·15	18	1·15	18	1·20	21	1·50	50
12	....	....	1·55	56	1·15	18	1·15	18	1·20	21	1·35	34
13	....	....	1·50	50	1·15	18	1·10	15	1·20	21	1·30	29
14	....	....	1·50	50	1·10	15	1·10	15	1·20	21	1·30	29
15	....	....	1·50	50	1·10	15	1·20	21	1·15	18	....	....
16	....	....	1·45	45	1·10	15	1·20	21	1·15	[illegible]	....	....
17	....	....	1·45	45	1·10	15	1·20	21	1·15	[illegible]	....	....
18	....	....	1·40	39	1·10	15	1·25	25	1·20	21	....	....
19	2·20	280	1·40	39	1·10	15	1·30	29	1·30	29	....	....
20	2·10	215	1·40	39	1·10	15	1·20	21	1·25	25	....	....
21	2·05	191	1·40	39	1·15	18	1·20	21	1·25	25	....	....
22	2·00	168	1·40	39	1·10	15	1·15	18	1·20	21	....	....
23	2·00	168	1·35	34	1·10	15	1·15	18	1·20	21	....	....
24	2·00	168	1·35	34	1·10	15	1·15	18	1·20	21	1·20	21
25	2·05	191	1·30	29	1·10	15	1·10	15	1·20	21	....	....
26	2·00	168	1·30	29	1·10	15	1·10	15	1·20	21	1·40	39
27	2·00	168	1·30	29	1·10	15	1·15	18	1·20	21	1·40	39
28	1·95	148	1·30	29	1·35	12	1·25	25	1·20	21	1·40	39
29	1·90	129	1·30	29	1·00	10	1·20	21	1·20	21	1·30	29
30	1·95	148	1·25	25	1·00	10	1·15	18	1·20	21	1·30	29
31	....	....	1·25	25	1·00	10	....	....	1·30	29	....	....

MONTHLY DISCHARGE of Granite Creek at mouth, for 1914.

(Drainage area, 40 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
	280	129	178	4·4	4·9	10,592
	129	25	55	1·4	1·6	3,381
st	25	10	16·7	0·4	0·5	1,027
ember	29	12	17·6	0·4	0·4	1,047
ober	29	18	21·6	0·5	0·6	1,328
mber	50	21	(From 1st to 14th, 24th, 26th to the 30th)			

Note.—The average annual precipitation over this drainage area is probably 20 inches at the stream's mouth, to hes at its source.
The station was not established until the freshet flow for 1914 was almost over.
Ice conditions existed during December and part of November.

KETTLE RIVER, NORTH FORK (2052).

Location.—At Grand Forks, Water District No. 5.

Records Available.—June 1 to December 31, 1914.

Drainage Area.—Six hundred and forty square miles.

Gauge.—Standard vertical staff gauge situated on foot bridge, graduated in feet and tenths, and read daily by Geo. O'Keefe.

Channel.—Channel is straight for 100 yards above and below measuring section. Velocity high.

Discharge Measurements.—Five discharge measurements have been obtained in 1914. Meterings are made by cable suspension from foot bridge.

Winter Flow.—No records have been obtained on this river during winter months.

Accuracy.—The accuracy will eventually be high. The present results should fall well within 15 per cent. Results for June may be inaccurate since slag from the Granby Smelter is sometimes carried downstream to the gauging section prior to the freshet, not being carried out until the spring floods are at their height.

DISCHARGE MEASUREMENTS of Kettle River, North Fork, at Grand Forks, 1914.

Date.	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	[illegible]
May 19	C. E. Richardson	1527	130	1,100	4·59	5·08	[illegible]
June 9	K. G. Chisholm	1913	132	847	2·77	4·00	[illegible]
July 22	"	1913	123	474	0·90	1·48	[illegible]
Aug. 22	"	1913		255	0·35	0·52	[illegible]
" 24	"	1913		244	0·35	0·56	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, North Fork, near Grand Forks, for 1914.

Day	June.	
	Gauge Height.	Discharge
	Feet.	Sec.-ft
1	5·10	5,100
2	5·65	7,360
3	7·00	13,400
4	7·05	13,625
5	6·00	8,900
6	5·10	5,100
7	4·70	3,800
8	4·30	2,850
9	4·05	2,420
10	3·90	2,205
11	4·00	2,350
12	4·00	2,350
13	4·35	2,950
14	5·10	5,100
15	5·20	5,480
16	5·35	6,090
17	5·60	7,150
18	5·75	7,785
19	5·30	5,880
20	4·70	3,800
21	4·40	3,050
22	4·00	2,350
23	3·75	2,030
24	3·60	1,875
25	3·70	1,975
26	3·70	1,975
27	3·70	1,975
28	3·60	1,875
29	3·50	1,780
30	3·65	1,925

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, North Fork, near Grand Forks, for 1914.

DAY.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.
1	3·60	1,875	1·00	220	0·45	78	1·30	340	2·00	695	1·50	[illegible]
2	3·50	1,780	1·00	220	0·45	77	1·25	320	2·15	780	1·50	[illegible]
3	3·50	1,780	1·00	220	0·45	78	1·25	320	2·35	900	1·50	[illegible]
4	3·35	1,640	0·90	180	0·40	70	1·20	300	2·50	995	1·50	[illegible]
5	3·30	1,595	0·90	180	0·40	70	1·20	300	2·50	995	1·50	[illegible]
6	3·10	1,430	0·80	150	0·40	70	1·20	300	2·50	995	1·40	[illegible]
7	2·85	1,235	0·70	120	0·40	70	1·15	280	2·50	995	1·40	[illegible]
8	2·70	1,130	0·40	70	0·45	77	1·15	280	2·40	930	1·30	[illegible]
9	2·55	1,025	0·40	70	0·45	78	1·10	260	2·30	870	1·20	[illegible]
10	2·40	930	0·50	85	0·50	85	1·10	260	2·30	870	1·10	[illegible]
11	2·30	870	0·50	85	0·50	85	1·10	260	2·20	810	1·00	[illegible]
12	2·20	810	0·60	100	0·55	93	1·10	260	2·20	810	0·90	[illegible]
13	2·10	750	0·60	100	0·55	92	1·10	260	2·10	750	0·90	[illegible]
14	2·10	750	0·60	100	0·55	93	1·15	280	2·10	750	0·90	[illegible]
15	2·00	695	0·60	100	0·60	100	1·15	280	2·20	810	0·90	[illegible]
16	2·00	695	0·60	100	0·60	100	1·20	300	2·20	810	0·90	[illegible]
17	1·90	640	0·60	100	0·70	120	1·35	362	1·90	[illegible]	0·90	[illegible]
18	1·80	585	0·60	100	0·70	120	1·55	460	1·80	585	0·90	[illegible]
19	1·70	535	0·60	100	0·70	120	1·90	640	1·80	585	0·90	[illegible]
20	1·60	485	0·60	100	0·85	165	2·10	750	1·80	585	0·90	[illegible]
21	1·50	435	0·60	100	1·05	240	2·10	750	1·80	585	0·90	[illegible]
22	1·40	385	0·60	100	1·15	280	2·00	695	1·80	585	0·90	[illegible]
23	1·40	385	0·55	92	1·10	260	1·85	613	1·80	585	0·90	[illegible]
24	1·30	340	0·55	92	1·10	260	1·80	585	1·80	585	0·90	[illegible]
25	1·30	340	0·55	93	1·10	260	1·80	585	1·70	535	0·90	[illegible]
26	1·30	340	0·50	85	1·10	260	1·80	585	1·70	535	0·90	[illegible]
27	1·20	300	0·50	85	1·20	300	1·70	535	1·60	485	1·00	[illegible]
28	1·20	300	0·50	85	1·20	300	1·70	535	1·60	485	1·00	[illegible]
29	1·10	260	0·50	85	1·30	340	1·70	535	1·60	485	1·00	[illegible]
30	1·10	260	0·50	85	1·30	340	1·70	535	1·60	485	1·00	[illegible]
31	1·00	220	0·50	85	....	......	1·85	613	...	....	1·00	[illegible]

MONTHLY DISCHARGE of Kettle River, North Fork, near Grand Forks, for 1914.

(Drainage area, 640 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Tot in acre
June.	13,625	1,780	4,483	7·0	7·8	[illegible]
July	1,875	220	800	1·2	1·4	[illegible]
August..	220	70	112·5	0·2	0·2	
September	340	70	156·0	0·2[illegible]	0·27	
October..	750	260	431·5	0·7	0·8	
November..	995	485	717·0	1·1	1·2	[illegible]
December	435	180	254	0·4	0·5	
The period..	13,625	70	993·4	1·55	12·17	[illegible]

NOTE.—No precipitation records available.

Mr. George O'Keefe, gauge reader, states that only in very severe winters does the north fork of the river freeze at this point He states that it has not been frozen over once during the period of his residence at Grand fourteen years.

KETTLE RIVER, WEST FORK (2045).

Location.—Near Westbridge, Water District No. 5.

Records Available.—February 23 to September 30, 1914.

Drainage Area.—Six hundred and ninety square miles.

Gauge.—Standard vertical staff gauge, graduated in feet and tenths, read daily by R. Demazes.

Channel.—Channel is straight for 500 feet above and below measuring section. Bed composed of gravel and boulders. Velocity varies with stage of water. Highest recorded mean velocity 4 feet per second. Highest recorded discharge 1,235 cubic feet per second.

Discharge Measurements.—Are obtained from bridge. Three measurements were procured during 1914 at varying stages.

Winter Flow.—No records have been taken on this river during winter months. Partial ice conditions prevail during January and February.

Accuracy—Accuracy of returns is considered to be fairly high, and results should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Kettle River, West Fork, at Westbridge, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Guage Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 7	E. M. Dann and K. G. Chisholm	1,913	97·5	304·0	4·05	1·78	1,235·0
July 20	K. G. Chisholm	1,913	97·0	122·0	1·43	−0·09	174·0
Aug 27	"	1,913	41·0	35·0	1·20	−0·71	42·0[1]

[1] Low-water section.

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, West Fork, near mouth, for 1914.

DAY.	February.		March.		April.		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec
1				150	0·50	360	3·00	2,560	3·20	[illegible]
2				160	0·50	360	3·70	3,305	3·05	[illegible]
3				170	0·55	380	4·05	3,670	4·00	[illegible]
4				180	0·60	400	3·80	3,415	3·35	[illegible]
5			..	190	0·70	445	3·40	2,985	2·90	[illegible]
6			0·0	200	0·75	470	3·35	2,932	2·45	[illegible]
7			0·0	200	1·00	610	3·35	2,932	2·40	[illegible]
8			0·0	200	1·50	975	3·25	2,825	2·20	[illegible]
9			0·0	[illegible]	1·60	1,065	2·90	2,445	2·10	[illegible]
10			0·0	200	1·85	1,317	2·95	2,502	2·10	[illegible]
11			0·0	200	1·95	1,425	2·75	2,287	2·05	[illegible]
12			0·05	215	2·15	1,642	2·75	2,287	2·05	[illegible]
13			0·05	215	2·55	2,072	2·90	2,445	2·20	[illegible]
14			0·05	215	2·75	2,287	3·40	2,985	2·20	[illegible]
15			0·10	230	3·05	2,610	4·45	4,115	2·25	[illegible]
16			0·10	230	2·95	2,502	4·15	3,782	2·40	[illegible]
17			0·15	245	2·50	2,020	3·85	3,467	2·30	[illegible]
18			0·20	260	2·55	2,072	3·45	3,040	2·15	[illegible]
19			0·45	346	2·70	2,235	3·15	2,715	1·85	[illegible]
20			0·60	400	2·80	2,340	2·40	[illegible]	1·90	[illegible]
21			0·70	445	2·80	2,340	2·40	1,910	1·75	[illegible]
22			0·65	422	2·95	2,502	2·55	2,072	1·65	[illegible]
23	2·30	1,800	0·60	400	2·85	2,392	2·80	2,340	1·60	[illegible]
24	2·20	1,695	0·50	360	2·80	2,340	2·80	2,340	1·55	[illegible]
25	2·25	1,747	0·50	360	2·70	2,235	2·95	2,502	1·55	[illegible]
26	2·22	1,715	0·50	360	2·60	2,125	3·25	2,825	1·50	[illegible]
27	2·15	1,642	0·60	400	2·50	2,020	3·25	2,825	1·55	[illegible]
28	2·10	1,590	0·65	422	2·40	1,910	3·45	3,040	1·50	[illegible]
29			0·60	400	2·60	2,125	3·15	2,715	1·45	[illegible]
30			0·50	360	2·70	2,235	3·05	2,160	1·25	[illegible]
31			0·50	360			2·80	2,340		

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, West Fork, near mouth, for 1914.

DAY.	July.		August.		September	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft
1	1·15	705	−0·30	120	−0·80	30
2	0·95	580	−0·35	110	−0·80	30
3	0·90	550	−0·40	100	−0·80	30
4	0·85	522	−0·50	80	−0·70	43
5	0·90	550	−0·50	80	−0·70	43
6	0·80	495	−0·55	70	−0·70	43
7	0·70	445	−0·70	43	−0·60	60
8	0·70	445	−0·70	43	−0·60	60
9	0·70	445	−0·80	30	−0·60	60
10	0·60	400	−0·80	30	−0·60	60
11	0·55	380	−0·80	30	−0·50	80
12	0·50	360	−0·90	15	−0·50	80
13	0·40	325	−0·90	15	−0·40	100
14	0·30	290	−0·90	15	−0·40	100
15	0·40	325	−0·90	15	−0·50	80
16	0·35	307	−0·85	23	−0·50	80
17	0·35	307	−0·80	30	−0·40	100
18	0·40	325	−0·80	30	−0·30	120
19	0·30	290	−0·75	37	−0·30	120
20	0·30	290	−0·70	43	−0·30	120
21	0·30	290	−0·65	52	−0·35	110
22	0·35	307	−0·65	52	−0·30	120
23	0·30	290	−0·70	43	−0·20	145
24	0·20	260	−0·65	52	−0·20	145
25	0·10	230	−0·70	43	−0·25	133
26	0·05	215	−0·70	43	−0·30	120
27	0·00	200	−0·70	43	−0·30	120
28	0·00	200	−0·70	43	−0·25	133
29	−0·10	170	−0·75	37	−0·20	145
30	−0·15	158	0·80	30	−0·25	133
31	−0·15	158	−0·80	30		

MONTHLY DISCHARGE of Kettle River, West Fork, near mouth, for 1914.

(Drainage area, 690·0 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre-feet.
ry						
ary	1,800	1,590	For the period Feb. 23—Feb. 28.			
i	445	150	280·5	0·4	0·5	17,247
	2,610	360	1,660·3	2·4	2·7	98,797
	4,115	1,910	2,778	4·0	4·6	170,816
	3,615	775	1,649	2·4	2·7	98,121
	705	158	349	0·5	0·6	21,459
st	120	15	46	0·07	0·08	2,828
nber	145	30	91·4	0·13	0·14	5,439
eriod	4,115	15	979·0	1·41	11·32	414,707

OTE.—Precipitation is probably from 20 to 30 inches annually.

turns for October, November and December are withheld from publication owing to unreliability of gauge

KETTLE RIVER NEAR NICHOLSON'S BRIDGE (2046).

Location.—Near Kettle Valley, Water District No. 5.

Records Available.—March 1 to December 11, 1914.

Drainage Area.—Two thousand, one hundred and eighty square miles.

Gauge.—Standard vertical staff gauge, graduated in feet and tenths, situated on pier of highway bridge, and read daily by F. Whiting (rancher).

Channel.—The channel is straight for about 500 feet above and below measuring section. Average width, 150 feet. Bed of river is composed of gravel and sand, and considered permanent. Velocity high and control is good.

Discharge Measurements.—Four discharge measurements were obtained during 1914. Highest recorded discharge 6,215 feet per second.

Winter Flow.—Ice conditions exist during January and February.

Accuracy.—Considered to be very high, and results should be within 5 per cent, except at extreme high water.

DISCHARGE MEASUREMENTS of Kettle River at Nicholson's Bridge, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 20	C. E. Richardson & C. Varcoe.	1,527	178·0	1,063·0	5·75	5·00	6,104·0
June 7	E. M. Dann & K. G. Chisholm	1,913	162·0	869·0	4·86	3·79	4,225·0
July 19	" "	1,913	154·0	329·0	2·93	0·36	668·0
Aug. 27	" "	1,913	137·0	184·0	0·78	−0·80	144·0

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River near Nicholson's Bridge, Rock Creek, for 1914.

DAY.	January.		February.		March.		April.		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.
1					−0·6	200	0·5	735	4·1	4,675	4·40	5,140
2					−0·6	200	0·5	735	4·7	5,610	4·90	5,930
3					−0·6	200	0·5	735	5·5	6,910	6·40	8,410
4					−0·6	200	0·5	735	5·1	6,250	6·55	8,655
5					−0·5	230	0·55	765	4·55	5,370	5·35	6,660
6					−0·4	265	0·8	930	4·35	5,060	4·35	5,060
7					−0·4	265	1·35	1,320	4·00	4,520	3·90	4,520
8					−0·4	265	1·75	1,645	3·95	4,445	3·60	3,920
9					−0·4	265	2·05	1,920	4·05	4,595	3·55	3,845
10					−0·4	265	2·25	2,125	4·30	4,830	3·45	3,700
11	−0·3	300			−0·4	265	2·55	2,460	4·60	5,450	3·50	3,775
12	−0·3	300			−0·4	265	2·80	2,790	4·85	5,850	3·55	3,845
13	−0·3	300			−0·4	265	3·10	3,195	5·05	6,175	3·85	4,295
14	−0·25	320			−0·3	300	3·45	3,700	5·60	7,075	4·35	5,060
15	−0·25	320			−0·2	340	3·70	4,070	6·45	8,490	4·45	5,215
16	−0·25	320			−0·1	390	4·00	4,520	6·85	9,150	4·35	5,060
17	−0·25	320			0·0	440	4·00	4,520	6·10	7,915	4·40	5,140
18	−0·3	300			0·0	440	3·90	4,370	5·60	7,075	4·05	4,595
19	−0·3	300			0·0	440	3·50	3,775	5·30	6,580	3·60	3,920
20	−0·3	300			0·0	440	4·15	4,750	5·00	6,095	3·35	3,5[illegible]
21	−0·3	300			0·1	495	4·10	4,675	5·00	6,095	3·10	3,195
22	−0·3	300			0·15	525	3·80	4,220	4·95	6,010	2·90	2,410
23					0·3	610	3·60	3,920	5·20	6,415	2·45	2,345
24					0·4	670	3·90	4,370	5·25	6,495	2·40	2,290
25					0·45	700	3·80	4,220	5·05	6,175	2·40	2,290
26					0·5	735	3·60	3,920	4·75	5,690	2·40	2,290
27					0·5	735	3·50	3,775	4·10	4,675	2·35	2,235
28					0·5	735	3·50	3,775	3·95	4,445	2·30	2,180
29					0·5	735	3·40	3,630	3·55	3,845	2·27	2,14[illegible]
30					0·5	735	3·60	3,920	3·40	3,630	2·20	2,[illegible]
31	....	..	.	...	0·5	735	.	. .	3·80	4,220	. . .	.

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River near Nicholson's Bridge, Rock Creek, for 1914.

Day	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Di charge
	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet	
1	2·00	1,870	−0·4	265	−0·85	130	0·15	520	0·5	735		
2	1·80	1,690	−0·4	265	−0·90	120	0·02	451	0·55	765		
3	1·80	1,690	−0·4	265	−0·90	120	0·0	440	0·7	865	−0·[illegible]	
4	1·70	1,600	−0·45	250	−0·90	120	0·0	440	0·6	800	−0·2	
5	1·60	1,520	−0·50	230	−0·90	120	0·0	440	0·68	852	−0·2	
6	1·45	1,400	−0·50	230	−0·90	120	−0·02	430	0·77	910	−0·2	
7	1·30	1,290	−0·50	230	−0·90	120	−0·10	390	0·69	845	−0·2	
8	1·15	1,175	−0·55	215	−0·85	130	−0·15	365	0·55	765	−0·2	
9	1·05	1,105	−0·55	215	−0·80	140	−0·20	340	0·50	735	−0·2	
10	0·85	965	−0·55	215	−0·80	140	−0·22	330	0·42	683	−0·2	
11	0·70	865	−0·55	215	−0·75	155	−0·25	320	−0·37	652	−0·22	
12	0·65	830	−0·55	215	−0·75	155	−0·25	320	0·30	610		
13	0·50	735	−0·60	200	−0·70	170	−0·20	340	0·25	580		
14	0·60	800	−0·60	200	−0·65	185	−0·15	365	0·20	550		
15	0·70	865	−0·60	200	−0·60	200	−0·05	415	0·20	550		
16	0·45	700	−0·60	200	−0·60	200	−0·05	415	0·20	550		
17	0·40	670	−0·60	200	−0·50	230	0·02	451	0·20	550		
18	0·40	670	−0·65	185	−0·40	265	0·38	658	0·15	520		
19	0·40	670	−0·65	185	−0·20	340	0·65	832	0·10	495		
20	0·40	670	−0·65	185	−0·10	390	0·60	800	0·10	495		
21	0·40	670	−0·65	185	0·0	440	0·50	734	0·0	440		
22	0·30	610	−0·70	170	0·0	440	0·40	670	0·0	440		
23	0·30	610	−0·70	170	−0·5	415	0·32	62[illegible]	0·0	440		
24	0·25	580	−0·80	140	−0·15	365	0·27	592	−0·05	415		
25	0·20	550	−0·80	140	−0·25	320	0·25	580	−0·05	415		
26	0·15	520	−0·80	140	−0·15	365	0·20	550	−0·10	390		
27	0·05	465	−0·8	140	−0·15	365	0·20	550	−0·10	[illegible]		
28	−0·10	390	−0·80	140	0·0	440	0·17	533	−0·10	390		
29	−0·20	340	−0·85	130	0·15	520	0·15	522	−0·10	390		
30	−0·30	300	−0·85	130	0·20	550	0·20	550	−0·10	390		
31	−0·40	265	−0·85	130	...	...	0·27	592	...	...	...	

MONTHLY DISCHARGE of Kettle River at Nicholson's Bridge, Rock Creek, for 1914.

(Drainage area, 2,180 square miles.)

Month.	Discharge in Second Feet.				Run Off	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Tot in acre
March	735	200	430	0·2	0·2	[illegible]
April	4,750	735	3,007	1·4	1·6	[illegible]
May	9,150	3,630	5,800	2·7	3·1	[illegible]
June	8,655	2,092	4,142	1·9	2·1	[illegible]
July	1,870	265	873	0·4	0·5	[illegible]
August	265	130	193	0·1	0·1	[illegible]
September	550	120	259	0·1	0·1	[illegible]
October	832	320	502	0·2	0·2	[illegible]
November	910	390	587	0·3	0·3	[illegible]
December	390	332	(for the period Dec. 1 to Dec. 11)			
The year	9,150	120	1,395 (estimated)	0·8	8·7 (estimated)	1,0[illegible] (estim

NOTE.—Precipitation records are not available, but it probably varies from 20 to 30 inches per annum in average. This station gives the flow of the Kettle river above Midway before it joins Boundary creek. Winter conditions existed subsequent to December 11.

KETTLE RIVER AT CARSON (2049).

Location.—At Carson, Water District No. 5.

Records Available.—September 5 to December 31, 1913; January 1 to 22, February 25 to December 9, 1914.

Drainage Area.—Three thousand and ten square miles.

Gauge.—Gauge is a movable staff gauge situated on downstream side of highway bridge, 4 miles from Grand Forks.

Channel.—Straight at measuring section; bed of stream, gravel and sand; control good.

Discharge Measurements.—Measurements are made from highway bridge. Four meterings were obtained during 1914. Highest recorded discharge 7,840 second-feet.

Winter Flow.—Partial ice conditions prevail during December, January, and February.

Accuracy.—Accuracy is considered good, and results should fall within 10 per cent.

KETTLE RIVER.

The Kettle river has its source in the southern portion of the Gold range, and drains the district between the Okanagan and Arrow lakes. It discharges into the Columbia at Marcus, in the state of Washington. From its source it follows a southerly course to Westbridge, a distance of 75 miles, where it is joined by the West Fork entering from the northeast. From Midway to Rock creek the course is southerly. The river here takes a turn to the southeast and crosses into United States territory at Midway, 10 miles below. After a wide semi-circular loop it crosses the boundary into Canadian territory at Danville, below Grand Forks. At Grand Forks the North Fork joins it. From Grand Forks it flows due east in a line about a mile north of boundary to Cascade. It turns south here across the boundary towards its confluence with the Columbia.

The North Fork and the West Fork are the chief tributaries. Boundary creek and Rock creek are next in size. Boundary creek joins at Midway from the north, Rock creek comes in at the village of Rock Creek from the west. Christina creek discharges into the Kettle near Cascade, draining Christina lake.

The total drainage area in British Columbia is about 3,160 square miles. The drainage area of the North Fork is 640 square miles; of Boundary creek, 125 square miles; of the West Fork, 690 square miles; and of the main river above the West Fork, 1,175 square miles.

The water is used for irrigation in the vicinity of Grand Forks, Cascade, and Rock creek. These are the principal agricultural areas in the district, the most important being that around Grand Forks, where some 2,000 acres are planted in fruit trees. With exception of the localities mentioned there is little gricultural land in the district. The tributary valleys and the major portion of the main valley being narrow and the slopes steep. The plateaus are above the altitude limit for agriculture.

From Grand Forks to Cascade, a distance of 12 miles, the valley of the Kettle river is wide and flat and suitable for irrigation by pumping. Several umping plants are in operation. The transmission lines from the Cascade Power and Light Company's plant and from the Bonnington Falls plant runs through the valley. Power may be had at 3 cents per killowatt hour.

There are three hydro-electric developments in the district. The Cascade Power and Light Company's plant at Cascade developes 5,000 horse-power der a head of 155 feet. This is auxiliary to the Bonnington Falls plant on the

Kootenay below Nelson. Power from these plants is used at Grand Forks, Phoenix, and Greenwood for town lighting and for use at the smelters and mines. The Granby Company develop about 700 horse-power under a 30-foot head from the North Forks near Grand Forks for use in its smelter. The city of Greenwood is lighted from a plant of 250 horse-power capacity under 130-foot head at Boundary falls.

Very little data as to climatic conditions are available, precipitation and temperatures vary greatly over the district owing to the irregular formation. The mean annual precipitation in the vicinity of Grand Forks is probably about 15 inches. In the higher altitudes it is greater.

The northern portion of the district is well timbered with cedar, hemlock, and pine. Considerable logging is carried on, the total drive of the Kettle river and its tributaries being over twenty million feet in 1913.

Regular gauging stations have been established at the following places:—At Carson, above the North Fork, on the North Fork near its mouth; on Boundary creek at Greenwood; on the Kettle below Rock creek; and on the West Fork at Westbridge.

DISCHARGE MEASUREMENTS of Kettle River at Carson, for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharg
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft
May 19	C. E. Richardson and C Varcoe.	1527	169	1,460	5·37	7·15	7,8
June 9	K. G. Chisholm	1913	158	1,161	3·62	8·95	4,20
July 23	"	1913	153	693	0·99	12·09	68
Aug. 24	"	1913	120	560	0·39	12·09	221

Daily Gauge Height and Discharge of Kettle River at Carson, for 1913.

Day.	September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft.
1			12·3	555	12·1	685	12·3	555
2			12·3	555	12·2	620	12·3	555
3			12·4	490	12·2	620	12·3	555
4			12·4	490	12·2	620	12·3	555
5	11·6	1,070	12·4	490	12·1	685	12·4	490
6	11·6	1,070	12·4	490	12·0	760	12·5	430
7	11·8	910	12·4	490	12·1	685	12·5	430
8	12·0	760	12·4	490	12·1	685	12·4	490
9	12·1	685	12·4	490	12·2	620	12·1	685
10	12·1	685	12·5	430	12·1	685	12·2	620
11	12·2	620	12·4	490	12·1	685	12·2	620
12	12·3	555	12·4	490	12·2	620	12·3	555
13	12·3	555	12·4	490	12·2	620	12·4	490
14	12·3	555	12·3	555	12·25	587	12·4	490
15	12·3	555	12·0	760	12·4	490	12·4	490
16	12·3	555	12·0	760	12·2	620	12·4	490
17	12·4	490	12·3	555	12·2	620	12·5	430
18	12·4	490	12·0	760	12·1	685	12·4	490
19	12·4	490	12·2	620	12·2	620	12·4	490
20	12·4	490	12·3	555	12·2	620	12·4	490
21	12·4	490	12·3	555	12·25	588	12·3	555
22	12·4	490	12·2	620	12·5	430	12·3	555
23	12·45	460	12·2	620	12·4	490	12·1	685
24	12·4	490	12·2	620	12·4	490	12·0	760
25	12·4	490	11·8	910	12·4	490	12·0	760
26	12·4	490	11·6	1,070	12·45	460	12·0	760
27	12·5	430	11·8	910	12·25	587	12·1	685
28	12·5	430	11·8	910	12·25	588	12·2	620
29	12·5	430	12·0	760	12·2	620	12·3	555
30	12·4	490	12·0	760	12·3	555	12·3	555
31	. .	.	12·1	685	.....	....	12·4	490

Monthly Discharge of Kettle River, at Carson, for 1913.

(Drainage area, 3,010 square miles.)

Month.	Discharge in Second Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
September	1,070	430	585·5	0·2	0·22	34,839
October	1,070	430	626·6	0·2	0·23	38,528
November	760	430	604·3	0·2	0·22	35,958
December	760	430	560·6	0·18	0·21	34,470

Note.—These data were compiled from gauge readings taken under the direction of Mr. Clifford Varcoe, Provincial Water Rights Engineer, at Grand Forks, to whom due acknowledgment is made.

For remarks relating to precipitation, etc., see Kettle River for 1914

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, at Carson, for 191

Day.	January.		February.		March.		April.		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	12·4	490	.....	..	12·5	430	12·0	760	8·90	4,275	8·30	[illegible]
2	12·5	430	.....	.	12·5	430	12·0	760	8·50	5,000	8·00	[illegible]
3	12·5	430	.....	..	12·5	430	12·05	722	7·50	7,065	7·50	[illegible]
4	12·5	430			12·6	375	11·9	835	6·90	8,400	7·70	[illegible]
5	12·5	430			12·6	375	11·9	835	7·65	6,735	7·90	[illegible]
6	12·5	430			12·6	375	11·6	1,070	7·90	6,195	8·20	[illegible]
7	12·4	490			12·6	375	11·2	1,435	8·20	5,575	8·60	[illegible]
8	12·3	555			12·7	320	10·7	1,930	8·50	5,000	8·70	[illegible]
9	12·3	555			12·7	320	10·4	2,235	8·20	5,575	8·90	[illegible]
10	12·4	490			12·7	320	10·2	2,450	7·90	6,195	9·00	[illegible]
11	12·5	430			12·7	320	9·9	2,800	7·65	6,735	9·00	[illegible]
12	12·55	402			12·6	375	9·75	2,995	7·70	6,625	9·00	[illegible]
13	12·6	375			12·6	375	9·35	3,555	7·40	7,285	8·90	[illegible]
14	12·4	490			12·6	375	9·10	3,945	7·20	7,730	8·50	[illegible]
15	12·45	460			12·5	430	9·00	4,105	6·25	9,920	8·30	[illegible]
16	12·4	490			12·5	430	8·90	4,275	5·20	13,470	8·35	[illegible]
17	12·4	490			12·5	430	8·30	5,380	5·90	10,760	8·40	[illegible]
18	12·4	490			12·5	430	8·50	5,000	7·00	8,175	8·60	[illegible]
19	12·5	430			12·5	430	8·70	4,630	7·15	7,840	8·90	[illegible]
20	12·5	430			12·4	490	8·20	5,575	7·30	7,510	9·11	[illegible]
21	12·6	375			12·4	490	8·20	5,575	7·50	7,065	9·30	[illegible]
22	12·6	375			12·3	555	8·50	5,000	7·40	7,285	9·50	[illegible]
23					12·25	587	8·60	4,810	7·50	7,065	9·60	[illegible]
24					12·0	760	8·60	4,810	7·40	7,285	9·70	[illegible]
25			12·5	430	11·9	835	8·40	5,190	7·30	7,510	9·70	[illegible]
26			12·55	402	11·9	835	8·70	4,630	7·20	7,730	9·70	[illegible]
27			12·5	430	12·0	760	8·60	4,810	7·70	6,625	9·90	[illegible]
28			12·5	430	12·0	760	8·70	4,630	8·20	5,575	10·0	[illegible]
29					12·0	760	8·80	4,450	8·50	5,000	10·1	[illegible]
30					12·0	760	8·90	4,275	8·70	4,630	10·1	[illegible]
31					12·0	760			8·40	5,190		

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, at Carson, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	10·2	2,450	12·4	490	12·9	221	12·0	760	11·8	910	12·1	685
2	10·3	2,340	12·4	490	13·0	180	12·0	760	11·7	990	12·1	685
3	10·5	2,130	12·4	490	13·0	180	12·1	685	11·7	990	12·2	620
4	10·5	2,130	12·5	430	13·0	180	12·2	620	11·8	910	12·2	620
5	10·7	1,930	12·5	430	13·0	180	12·2	620	11·6	1,070	12·3	555
6	10·8	1,830	12·5	430	13·0	180	12·3	555	11·55	1,112	12·3	555
7	10·9	1,730	12·6	375	12·9	221	12·3	555	11·55	1,113	12·3	555
8	11·0	1,630	12·6	375	12·9	221	12·3	555	11·6	1,070	12·3	555
9	11·1	1,530	12·6	375	12·9	221	12·3	555	11·7	990	12·3	555
10	11·3	1,340	12·6	375	12·9	221	12·3	555	11·75	950		
11	11·4	1,245	12·6	375	12·9	221	12·4	490	11·8	910		
12	11·5	1,155	12·4	490	12·9	221	12·4	490	11·8	910		
13	11·6	1,070	12·5	430	12·9	221	12·3	555	11·8	910		
14	11·4	1,245	12·5	430	12·9	221	12·3	555	11·9	835		
15	11·4	1,245	12·5	430	12·8	270	12·3	555	11·9	835		
16	11·4	1,245	12·5	430	12·7	320	12·3	555	12·1	685		
17	11·4	1,245	12·6	375	12·7	320	12·3	555	12·1	685		
18	11·5	1,155	12·6	375	12·6	375	12·0	760	12·1	685		
19	11·7	990	12·6	375	12·6	375	11·5	1,155	12·0	760		
20	11·7	990	12·6	375	12·6	375	11·6	1,070	12·1	685		
21	11·8	910	12·6	375	12·5	430	11·6	1,070	12·1	685		
22	11·9	835	12·6	375	12·4	490	11·7	990	12·0	760		
23	11·9	835	12·6	375	12·3	555	11·8	910	12·1	685		
24	12·0	760	12·7	320	12·3	555	11·9	835	12·1	685		
25	12·0	760	12·7	320	12·4	490	11·9	835	12·1	685		
26	12·1	685	12·7	320	12·4	490	11·9	835	12·1	685		
27	12·2	620	12·8	270	12·4	490	12·0	760	12·1	685		
28	12·3	555	12·8	270	12·3	555	12·0	760	12·1	685		
29	12·3	555	12·8	270	12·3	555	12·0	760	12·1	685		
30	12·4	490	12·8	270	12·0	760	12·0	760	12·1	685		
31	12·4	490	12·9	221		....	12·0	760				

MONTHLY DISCHARGE of Kettle River, at Carson, for 1914.

(Drainage area. 3,010 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.
January	555	375	453	0·15	0·17	27,854
February				....		....
March	835	320	506	0·17	0·20	31,113
April	5,575	722	3,449	1 10	1 20	205,230
May	13,470	4,275	7,001	2·30	2·60	430,475
June	7,065	2,560	4,365	1 40	1·60	259,764
July	2,450	490	1,230	0 40	0·50	76,511
August	490	221	378	0 12	0·14	23,267
September	760	180	343	0·11	0·12	20,410
October	1,155	490	717	0·24	0·28	44,099
November	1,113	685	831	0 27	0·30	49,446
December	685	555	For period	Dec 1st—Dec 9th.		
The year	13,470	180	1,700 (estimated)	0·54	8·41 (estimated)	1,215,000 (estimated)

·Precipitation varies from 20 to 30 inches per annum in normal years

conditions obtained at this station, subsequent to December 9, and also practically throughout the whole month of February

station gives the discharge of the Kettle river as it flows north, across the international boundary before joining the North Fork of the Kettle river at Grand Forks.

NISKONLITH CREEK (2031).

Location.—Section 5, township 21, range 13, west 6th meridian.

Records Available.—September 1 to December 31, 1911; April 1 to September, 13, 1912; May 1 to September 30, 1913; April 1 to December 11, 1914.

Drainage Area.—Fifty square miles.

Gauge.—Vertical staff gauge read semi-weekly by H. Hoffman.

Channel.—The stream bed is composed of large rocks and boulders Velocities are high and the control is good.

Winter Flow.—Ice conditions prevail during last half of December, January, February, and March.

Accuracy.—The accuracy is only medium, more measurements being required.

DISCHARGE MEASUREMENTS of Niskonlith Creek at mouth, 1914:-

For Meter measurements and further hydrographic data see Water Resources Paper Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Niskonlith Creek at mouth, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1							0·60	3·0	....	....	1·77	[illegible]
2												
3	0·75	6·7							1·40	35·0		
4							0·65	4·1				
5	0·75	6·7									1·72	[illegible]
6							0·70	5·3				
7									1·45	38·0		
8												
9	0·75	6·7					0·70	5·3			1·57	[illegible]
10												
11									1·50	41·0		
12	0·75	6·7										
13							0·72	6·0			1·50	[illegible]
14												
15									1·60	47·0		
16	0·75	6·7					0·72	6·0			1·47	[illegible]
17												
18												
19									1·80	59·0	1·42	[illegible]
20												
21							0·75	6·7				
22									1·90	66·0	1·30	[illegible]
23												
24							0·77	7·4				
25											1·22	[illegible]
26												
27							1·20	24·0	1·90	66·0		
28												
29											1·05	[illegible]
30							1·25	26·5	1·80	59·0		
31												

DAILY GAUGE HEIGHT AND DISCHARGE of Niskonlith Creek at mouth, for 1914.

Day.	July.		August.		September.		October.		November		December.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1							0·42	0·6			0·32	0·1
2	1·05	17·5										
3			0·57	2·6	0·50	1·4			0·40	0·4		
4											0·40	0·40
5							0·42	0·6				
6	1·0	15·0	0·57	2·6					0·40	0·4		
7												
8					0·47	1·0					0·60	3·0
9	0·45	0·9					0·42	0·6	0·40	0·4		
10			0·85	9·8								
11					0·45	0·9					0·40	0·4
12							0·45	0·9				
13	0·45	0·9	0·85	9·8					0·40	0·4		
14												
15					0·42	0·6						
16							0·42	0·6			0·40	Under ice.
17	0·45	0·9	0·55	2·2					0·37	0·3		
18					0·40	0·4					0·40	
19							0·40	0·4				
20												
21	0·45	0·9	0·55	2·2	0·37	0·3			0·30	0·1		
22												
23							0·40	0·4			0·37	
24	0·40	0·4	0·52	1·8					0·35	0·2		
25					0·32	0·2						
26											0·35	
27							0·40	0·4	0·35	0·2		
28	0·40	0·4	0·52	1·8	0·40	0·4						
29												
30							0·40	0·4				
31	0·57	2·6	0·52	1·8								

MONTHLY DISCHARGE of Niskonlith Creek at mouth, for 1914.

(Drainage area, 50 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.
April	26·5	3·0	9·4	0·19	0·21	559
May	66·0	35·0	51·4	1·03	1·19	3,160
June	57·0	17·5	38·5	0·77	0·86	2,291
July	17·5	0·4	4·4	0·09	0·10	270
August	9·8	1·8	3·8	0·08	0·09	234
September	1·4	0·2	0·65	0·01	0·01	39
October	0·9	0·4	0·54	0·01	0·01	33
November	0·4	0·1	0·30	0·01	0·01	18
December						
The period	66·0	0·1	13·62	0·27	2·48	6,604

NOTE. Precipitation varies from 10 to 20 inches.
Dam on Niskonlith lake controls the streams regimen.

Okanagan River (2052).

Location.—Near Fairview, Water District No. 4.

Records Available.—April 8 to December 31, 1914.

Drainage Area.—Three thousand square miles.

Gauge.—Standard 6-foot vertical staff gauge, read four times a week by A. S. Hatfield.

Channel.—Average width of channel at measuring section is seventy-five feet. Channel above the station curves gently from the southwest. Below the station the channel is straight for 50 feet, then curves to the southeast.

Bed of stream is composed of gravel and sand, and constant shifting of channel at the station has resulted.

Discharge Measurements.—Meterings have been obtained at all stages of flow, and were well distributed throughout at the season, thus making it possible to make adjustments for the change in area due to scouring.

Winter Flow.—No winter records have been made on this stream, but partial ice conditions are believed to exist during January and February.

Accuracy.—In spite of the adverse conditions, results are thought to be fairly high. It will be necessary to establish a new station in 1915.

Okanagan River.

The Okanagan river rises in Okanagan lake, a large body of water, 65 miles long and from 2 to 4 miles wide and, flowing southerly for 100 miles, joins the Columbia in the state of Washington. From Penticton, where the river leaves Okanagan lake, to the international boundary is [illegible] miles. Through the greater part of this distance it is a sluggish stream, expanding into three lakes. Dog lake, Masseaux lake, and Osoyoos lake. The international boundary cuts across the lower part of the last. From the falls at the foot of Dog lake to Vaseaux lake, a distance of 5 miles, the stream is swift.

The drainage basin in Canada has an area of 3,000 square miles. It is a long narrow valley, lying north-and-south in the eastern portion of the dry belt and includes one of the best fruit-growing districts in British Columbia. Irrigation is of course necessary, the precipitation varying from 15 inches in the northern parts to 8 inches in the south. The mountains on both sides of the valley are steep in most places, timbered on the upper slopes. The lower slopes are partly covered with light timber, but for the most part are open and covered with bunch grass. In places they give way to rolling hills and benches. The soil is fine and very fertile when it can be watered. On the whole the land is difficult of irrigation, chiefly because of its topography, and also because there are no large tributaries north of the border. The inflowing streams are small flowing in deep gulleys from the mountains. In the spring they are rushing torrents. In the summer they become nearly dry, and in most cases there are no storage possibilities. From Penticton south to the boundary there are large tracts of land which only need a water supply to become exceedingly productive.

The one large tributary of the Okanagan is the Similkameen. It flows from the west, and though it joins the Okanagan at Oroville, in Washington, by far the major part of its course is through Canadian territory. It is a larger stream than the Okanagan above the junction, but lacks the steadying influence of any lakes and is therefore subject to much greater fluctuations. In 1914 the minimum flow of the Okanagan was 485 second-feet, and of the Similkameen 160 second-feet. The maximum flow, however, was 1,500 second-feet for Okanagan and 15,500 for the Similkameen.

There is one good power site on the Okanagan. This is at Okanagan falls, at the foot of Dog lake. The river here is narrowly confined between two rock bluffs, and drops some 15 feet almost vertically. Dog lake and Okanagan lake act as natural reservoirs. A cheap development is possible at this point, and it is probable that here is a solution of the irrigation problem for large areas at present barren.

A gauge was installed on the Okanagan near Fairview by the Hydrographic Survey in April, 1914. Daily flow records are available from that date.

Discharge Measurements of Okanagan River near Fairview, for 1914.

Date.	Hydrographer.	Meter No	Width	Area of Section.	Mean Velocity	Gauge Height	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 7	E. M. Dann	1505	75	276	1·90	0·71	524
May 11	K. Chisholm	1505	75	456	2·63	2·43	1,199
June 5	"	1913	76	520	2·76	3·28	1,436
July 17	"	1913	76	454	2·51	2·27	1,138
Aug. 14	E. M. Dann	1913	75	354	2·20	1·31	796
" 28	K. G. Chisholm	1913	76	320	2·20	1·08	704
Nov. 21	"	1673	74	309	1·85	0·84	575

Shifting condition of channel existed during freshet season.

Daily Gauge Height and Discharge of Okanagan River near Fairview, for 1914.

Day	April		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1·80	945		
2					3·10	1,385
3					3·20	1,415
4					3·25	1,425
5			2·10	1,065	3·30	1,440
6			2·10	1,065	3·30	1,440
7			2·05	1,045		
8	0·80	560	2·10	1,065		
9	0·85	575			3·30	1,440
10	0·90	595			3·20	1,415
11					3·20	1,415
12			2·50	1,210	3·20	1,415
13			2·60	1,240		
14	1·20	710	2·90	1,325		
15	1·30	750	3·30	1,440		
16	1·35	765			3·50	1,500
17	1·35	765			3·50	1,500
18					3·40	1,470
19			3·20	1,415	3·30	1,440
20			3·10	1,385		
21	1·45	805	3·20	1,415		
22	1·45	805	3·20	1,145		
23	1·50	825			3·20	1,415
24	1·60	865			3·20	1,415
25					3·10	1,385
26			3·00	1,355	3·00	1,355
27			3·00	1,355		
28	1·65	885	2·90	1,325		
29	1·60	865	2·90	1,325		
30	1·65	885			2·85	1,310
31						

DAILY GAUGE HEIGHT AND DISCHARGE of Okanagan River near Fairview for 1914.

DAY.	July.		August.		September.		October.		November		Decembe	
	Gauge Height.	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis charge	Gauge Height	D char
	Feet.	Sec.-ft.	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec
1	2·80	1,295	......	.....	1·07	685	0·90	610	. .	. .	0·82	
2	2·75	1,280		....	1·05	675	.	.	0·90	610	0·85	
3	2·70	1,270	1·62	900	1·02	665	....	....	0·90	610	0·87	
4			1·60	890					0·90	610		
5		.	1·57	890			0·85	585	0·90	610		
6	2·50	1,210	1·55	880			0·84	585				
7	2·45	1,195	.	...	0·92	620	0·82	575			0·85	
8	2·40	1,180		.	0·90	610	0·82	575		.	0·85	
9	2·35	1,165		..	0·87	595			0·90	610	0·82	
10		..	1·45	840	0·85	585			0·90	610	0·82	
11		. . .	1·42	830					0·90	610		
12		. .	1·40	820	0·79	565	0·85	585	0·90	610		
13	2·30	1,155	1·37	810	0·80	565	0·85	585	..	...		
14	2·30	1,155			0·82	575	0·85	585			0·80	
15	2·27	1,145			0·82	575	0·85	585		..	0·80	
16	2·25	1,140						..	0·90	610	0·77	
17			1·30	785					0·87	595	0·77	
18			1·27	775					0·87	595		
19			1·25	765			0·95	630	0·87	595		
20	2·12	1,085	1·22	755			0·94	640				
21	2·10	1,075	....	.	0·80	565	0·92	620				
22	2·07	1,065	....		0·80	565	0·92	620			0·72	
23	2·05	1,055			0·80	565		.	0·85	585	0·67	
24	2·00	1,040	1·12	720	0·80	565			0·82	575	0·65	
25	.	.	1·10	715	.		.	.	0·80	565	0·65	
26			1·07	705			0·88	600	0·80	565		
27	1·90	1,000	1·05	695			0·88	600				
28	1·85	980			0·92	620	0·88	600			0·62	
29	1·80	965			0·92	620	0·88	600			0·62	
30	1·77	955	.	.	0·90	610	. . .	.	0·82	575	0·62	
31		.	1·10	700							0·62	

MONTHLY DISCHARGE of Okanagan River near Fairview, for 1914.

(Drainage area, 3,000 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF
	Maximum.	Minimum	Mean.	Per square mile.	Depth. in inches on Drainage area
April	885	560	761	0·25	0·28
May	1,440	945	1,258	0·42	0·48
June	1,500	1,310	1,421	0·47	0·52
July	1,295	955	1,129	0·37	0·43
August	900	695	792	0·26	0·30
September	685	565	601	0·20	0·22
October	630	575	598·2	0·20	0·23
November	610	565	596·5	0·20	0·22
December	595	485	540·5	0·15	0·17
The period	1,500	485	854·2	0·28	2·85

NOTE —This station was estalbished in April, 1914, having for the period a maximum flow of 1,500 sec.-fe and a minimum of 485 sec-feet in December.

The flow is regulated by Okanagan and Dog lakes, from which there is a large evaporation loss
The precipitation is low, varying from 10 to 30 inches annually

SIMILKAMEEN RIVER (2054).

Location.—Near Ashnola, Water District No. 4.

Records Available.—April 8 to December 31, 1914.

Drainage Area.—Two thousand three hundred and twenty square miles.

Gauge.—Standard vertical staff gauge, read by Harry Atherton of Keremeos.

Channel.—Average width of channel at measuring section is about 210 feet. Channel is straight at the station. Bed of stream is very rocky and water turbulent even at low stages.

Discharge Measurements.—The gauge-height discharge curve is very well rated by well-distributed meterings.

Winter Flow.—No winter records have been made on this stream. Partial ice conditions are believed to exist during January and February.

Accuracy.—Very high. Results compiled from a well-rated curve.

SIMILKAMEEN RIVER.

Two main streams unite at Princeton to form the Similkameen, the South Similkameen and the Tulameen rivers. The South Similkameen has its source in the Hogameen mountains of the Cascade range, some 15 miles south of the International boundary, and flows north for a distance of 50 miles to its confluence. The Tulameen heads in the Hope mountains of the Cascade range, and starting in a northerly direction, follows a curved line, finally joining in a southeast direction. Very few elevations are established in this district. The peaks of the Cascades at the international boundary obtain an altitude of 8,000 feet above sea-level. The highest points in the Hope range are not over 7,600 feet. At the confluence of the two main tributaries at Princeton the elevation of the river is about 2,100 feet. From this point the Similkameen flows in a southeasterly direction for 75 miles, joining the Okanagan at Oroville. The last 20 miles are in the state of Washington.

From the right going upstream, the main tributaries are: Keremeos creek at Keremeos, Twenty-mile creek at Hedley, and Five-mile and One-mile creeks at 5 and 1 miles, respectively, downstream from Princeton. From the left, Ashnola river at Ashnola, half-way between Keremeos and Hedley, is the chief tributary.

The Similkameen river is fairly swift. In the 25 miles between Princeton and Hedley the drop is 440 feet, giving an average grade of 19 feet to the mile. Approximately the same grade obtains for the 20 miles from Hedley to Keremeos. Below this point to the boundary the current is sluggish.

At Hedley the Daly Reduction Company, owners of the Nickle Plate mine, have taken advantage of the steep grade of the river for power purposes. By means of a dam and 3 miles of flume, a maximum head of 67 feet is obtained and a plant installed with a capacity of 1,800 horse-power. This new plant takes the place of a combination plant using water from twenty-mile creek and auxiliary steam engine. The plant was completed in 1914, and can deliver 2,000 horse-power. The drainage basin above the international boundary has an area of about 2,500 square miles. The river cuts right across the southern part of the Okanagan range in a V-shaped glacial valley, the mountains on each side rising steeply to an altitude of 5,000 or 6,000 feet. The southern slopes of the hills are open and grassy in many places, and afford excellent pasturage and, where timbered, the trees do not grow close together. The northern slopes are more thickly wooded. Precipitation varies with the altitudes. The average of four years at Hedley gives 10·8 inches for the annual precipitation. At the Nickel Plate mine, 3 miles away and 4,000 feet higher up, figures for the same four years show 21·8 inches.

The only agricultural land in the district is the bottom of the valley. Above Keremeos this is very narrow, but below that point it widens out and there are a number of fine fruit ranches.

A regular gauging station was established at Ashnola, below Ashnola creek, on April 8, 1914.

DISCHARGE MEASUREMENTS of Similkameen River at Ashnola, 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Feet	Ft. per sec	Sec. ft
April 8	E. M. Dann	1505	162	552	3·41	1·35	1,88
May 10	K. G. Chisholm	1505	202	1,097	6·69	3·92	7,32
June 10	"	1913	195	913	5·14	3·10	4,69
" 24	"	1913	194	856	4·51	2·75	3,8
July 29	"	1913	171	382·5	2·24	0·30	[illegible]
Aug. 30	"	1913	125	261	1·38	−0·47	[illegible]
Nov 23	"	1673	152	375	2·04	0·20	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Similkameen River at Ashnola, for 1914.

DAY.	April.		May.		June	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	D char
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec
1		...	2·75	3,870	4·50	
2	..	......	3·50	5,880	5·20	
3	....	.....	4·35	8,895	5·45	
4			3·95	7,440	4·60	
5			3·55	6,045	4·00	
6	....	.....	3·30	5,270	3·65	
7		.....	3·25	5,125	3·45	
8	1·35	1,880	3·15	4,840	3·25	
9	1·65	2,240	3·35	5,420	3·20	
10	1·85	2,480	3·80	6,900	3·15	
11	2·15	2,870	4·05	7,800	3·30	
12	2·15	2,870	4·30	8,710	3·60	
13	2·35	3,165	4·60	9,815	4·15	
14	2·65	3,675	5·50	13,130	4·40	
15	2·90	4,185	6·15	15,525	4·60	
16	2·85	4,075	5·90	14,600	4·80	
17	2·65	3,675	5·35	12,575	4·80	
18	2·40	3,240	5·25	12,205	4·50	
19	2·40	8,240	4·85	10,735	4·60	
20	2·95	4,305	4·75	10,365	3·70	
21	2·55	3,490	4·90	10,920	3·40	
22	2·35	3,165	4·90	10,920	3·10	
23	2·35	3,165	5·25	12,205	3·10	
24	2·20	2,940	5·35	12,575	3·00	
25	2·10	2,800	5·10	11,655	2·80	
26	2·10	2,800	4·50	9,450	2·75	
27	2·15	2,870	4·05	7,800	2·85	
28	2·10	2,800	3·80	6,900	2·75	
29	1·95	2,605	3·60	6,210	2·70	
30	2·10	2,800	3·65	6,380	2·85	
31		....	4·00	7,620	....	

DAILY GAUGE HEIGHT AND DISCHARGE of Similkameen River at Ashnola, for 1914.

Day.	July.		August		September		October.		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.
1	2·90	4,185	0·20	795	−0·53	338	−0·15	543	0·1	720	0·00	645
2	2·80	3,970	0·15	755	−0·58	318	−0·18	523	0·12	735	0·05	680
3	2·65	3,675	0·15	755	−0·55	330	−0·20	510	0·0	645	0·17	755
4	2·70	3,770	0·10	710	−0·55	330	−0·18	523	0·02	680	0·02	645
5	2·45	3,320	0·05	680	−0·55	330	−0·19	516	0·1	720	−0·07	610
6	2·15	2,870	0·05	680	−0·55	330	−0·22	498	0·15	757	0·00	645
7	2·00	2,670	0·05	680	−0·50	350	−0·20	510	0·12	735	−0·05	610
8	1·90	2,545	0·00	645	−0·45	375	−0·24	486	0·20	795	0·15	547
9	2·00	2,670	0·00	645	−0·40	400	−0·28	462	0·25	832	−0·37	425
10	1·75	2,360	0·00	645	0·30	450	−0·22	498	0·27	847	−0·55	330
11	1·60	2,180	0·00	645	−0·30	450	−0·12	562	0·27	847	−0·77	250
12	1·40	1,940	−0·10	575	−0·30	450	−0·04	617	0·47	1,009	−0·90	190
13	1·50	2,060	−0·10	575	−0·30	450	−0·04	617	0·37	926	−0·95	175
14	1·70	2,300	−0·10	575	−0·30	450	−0·06	603	0·17	772	−1·00	160
15	1·50	2,060	−0·20	510	−0·33	435	−0·12	562	0·15	757	−0·85	210
16	1·30	1,820	−0·20	510	−0·33	435	−0·20	510	0·02	680	−0·67	290
17	1·15	1,655	−0·20	510	−0·28	462	−0·19	516	−0·03	624	−0·60	310
18	1·10	1,605	−0·15	545	−0·28	462	−0·07	596	−0·00	645	−0·52	350
19	1·00	1,500	−0·15	545	−0·13	556	−0·04	617	−0·00	645	−0·40	400
20	0·90	1,400	−0·20	510	0·05	680	−0·00	645	0·01	652	−0·32	450
21	0·85	1,350	−0·20	510	−0·03	624	−0·00	645	0·25	832	−0·32	450
22	0·75	1,255	−0·20	510	−0·13	556	−0·03	624	0·27	847	−0·32	450
23	0·60	1,120	−0·30	450	−0·19	516	−0·10	575	0·20	795	−0·30	450
24	0·55	1,075	−0·40	400	−0·20	510	−0·08	589	0·15	757	−0·30	450
25	0·50	1,035	−0·45	375	−0·28	462	−0·00	645	0·15	757	−0·27	480
26	0·50	1,035	−0·50	350	−0·23	492	−0·00	645	0·37	926	−0·25	480
27	0·40	950	−0·50	350	−0·04	617	−0·08	589	0·47	1,009	−0·27	480
28	0·35	910	−0·55	330	0·10	720	−0·00	645	0·42	967	−0·27	480
29	0·30	870	−0·55	330	−0·03	624	−0·03	624	0·37	926	−0·27	480
30	0·25	830	−0·45	375	−0·13	556	0·01	720	0·20	795	−0·25	480
31	0·20	795	−0·53	338			0·01	720			−0·22	510

MONTHLY DISCHARGE of Similkameen River at Ashnola, for 1914.

(Drainage area, 2,320 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET				RUN-OFF	
	Maximum.	Minimum.	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet
April	4,305	1,880	3,101·5	1·33	1·5	184,550
May	15,525	3,870	8,960·6	3·86	4·45	550,966
June	12,945	3,770	6,839·5	2·95	3·29	406,980
July	4,185	795	1,993·0	0·86	0·99	122,543
August	795	330	542·5	0·23	0·26	33,357
September	720	318	468·6	0·02	0·2	27,883
October	720	462	578·5	0·25	0·29	35,570
November	1,009	624	786·5	0·33	0·37	46,800
December	755	160	447·3	0·19	0·22	27,503
The period	15,525	160	2,655·5	1·15	11·57	1,436,152

NOTE.—Precipitation over this drainage area varies from a minimum of 10 inches to a maximum of 50 inches at higher altitudes.

During 1914 the greatest flow recorded was 15,525 cubic feet per second, in May, and the lowest 160 cubic feet per second in December.

SHUSWAP RIVER AT ENDERBY (2034).

Location.—Section 26, township 18, range 9, west of the 6th meridian.

Records Available.—August 25 to November 10, 1911; March 1 to Decemb 31, 1912; April 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—One thousand six hundred and fifty square miles.

Gauge.—A standard vertical staff gauge situated on highway bridge, and read daily by D. Mowat.

Channel.—The channel is straight for 100 yards at section. The rise and fall of the river each year is about 10 feet. Control is good.

Winter Conditions.—Ice conditions prevail some years during January and February. During 1914 river remained open throughout.

Discharge Measurements.—Eleven well-distributed measurements have been obtained during 1911, 1912, and 1913. Measurements were made from boat except during high water, when they were made from bridge.

Accuracy.—The returns are considered to be accurate, and are within 10 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE of Shuswap River near Enderby, for 1914.

Day	January		February		March		April		May		June
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet
1	2.60	965	2.60	965	2.25	775	2.70	1,020		4,540	9.05
2	2.60	965	2.55	937	2.25	775	2.70	1,020		4,820	9.40
3	2.60	965	2.60	965	2.25	775	2.75	1,050	6.61	5,110	9.70
4	2.60	965	3.05	1,242	2.25	775	2.85	1,110	6.80	5,380	10.0
5	2.60	965	3.20	1,340	2.25	775	3.00	1,210	6.85	5,450	10.2
6	2.70	1,020	3.30	1,410	2.20	749	3.30	1,410	6.90	5,520	10.35
7	2.85	1,110	3.30	1,410	2.20	749	3.55	1,600	7.00	5,660	10.35
8	2.85	1,110	3.35	1,445	2.20	749	3.70	1,720	7.10	5,800	10.2
9	2.85	1,110	3.35	1,445	2.20	749	3.85	1,845	7.30	6,080	10.0
10	2.85	1,110	3.35	1,445	2.20	749	3.90	1,890	7.60	6,520	9.9
11	2.80	1,080	3.35	1,445	2.20	749	3.95	1,935	7.70	6,680	9.8
12	2.80	1,080	3.35	1,445	2.20	749	4.10	2,080	7.80	6,840	9.8
13	2.80	1,080	3.35	1,445	2.15	724	4.25	2,230	8.00	7,160	9.8
14	2.80	1,080	3.35	1,445	2.15	724	4.50	2,480	8.3	7,540	9.9
15	2.80	1,080	3.00	1,210	2.25	775	4.60	2,590	8.71	8,140	10.1
16	2.75	1,050	3.00	1,210	2.30	801	5.05	3,100	9.10	8,770	[illegible]
17	2.75	1,050	2.90	1,140	2.30	801	5.10	3,160	9.40	9,240	[illegible]
18	2.70	1,020	2.75	1,050	2.35	828	5.20	3,280	9.60	9,560	10.7
19	2.70	1,020	2.75	1,050	2.45	882	5.45	3,580	9.70	9,720	[illegible]
20	2.70	1,020	2.70	1,020	2.45	882	5.65	3,825	9.80	9,880	11.1
21	2.70	1,020	2.50	910	2.50	910	5.80	4,020	9.80	9,880	[illegible]
22	2.70	1,020	2.25	775	2.50	910	5.80	4,020	9.75	9,800	[illegible]
23	2.70	1,020	2.25	775	2.55	937	5.90	4,150	9.8	9,880	[illegible]
24	2.65	992	2.30	801	2.65	992	6.00	4,280	9.8	9,880	[illegible]
25	2.65	992	2.30	801	2.70	1,020	6.05	4,345	9.9	10,040	[illegible]
26	2.65	992	2.25	775	2.65	992	6.05	4,345	9.90	10,040	10.2
27	2.60	965	2.25	775	2.60	965	6.05	4,345	9.80	9,880	[illegible]
28	2.55	937	2.25	775	2.60	965	6.05	4,345	9.70	9,720	[illegible]
29	3.10	1,270			2.60	965	6.05	4,345	9.50	9,400	[illegible]
30	3.25	1,375			2.60	965	6.05	4,345	9.30	9,080	[illegible]
31	3.10	1,270			2.65	992			9.05	8,695	

DAILY GAUGE HEIGHT AND DISCHARGE of Shuswap River near Enderby, for 1914 (*Concluded*).

Day	July		August		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	9.80	9,880	5.20	3,290	3.30	1,410	3.45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	9.80	9,880	5.10	3,160	3.20	1,340	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	9.80	9,880	[illegible]	[illegible]	[illegible]	1,340	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	9.80	9,880	[illegible]	2,920	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	9.75	9,720	4.80	2,810	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	9,720	[illegible]	[illegible]	[illegible]	1,242	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	9,640	[illegible]	[illegible]	[illegible]	1,242	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	9.50	9,480	4.66	[illegible]	[illegible]	1,242	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,242	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	4.40	[illegible]	[illegible]	1,242	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,242	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	8,140	4.25	[illegible]	[illegible]	1,242	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,242	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	7,540	4.15	[illegible]	[illegible]	1,242	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	7,540	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]				[illegible]

[illegible]

MONTHLY DISCHARGE of Shuswap River at Enderby, for 1914.

(Drainage area, 1,650 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Rainfall
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	Inches
January	1,375	937	1,055	0·6	0·7	64,870	2·52
February	1,445	775	1,123	0·7	0·7	62,368	1·60
March	1,020	724	843	0·5	0·6	51,834	0·82
April	4,345	1,020	2,822	1·7	1·9	167,920	1·62
May	10,000	4,540	7,887	4·8	5·5	484,954	1·12
June	12,000	8,695	10,486	6·3	7·0	623,960	1·68
July	9,880	3,520	7,189	4·3	5·0	442,038	0·88
August	3,280	1,410	2,133	1·3	1·5	131,153	0·24
September	1,560	1,210	1,285	0·8	0·9	76,365	2·49
October	2,130	1,520	1,838	1·1	1·3	113,016	1·23
November	2,480	1,845	2,187	1·3	1·4	130,133	1·89
December	1,800	1,020	1,224	0·8	0·9	81,408	.....
The year	12,000	724	3,348	22·0	27·4	2,430,019	...

NOTE.—Rainfall data are from Monthly Weather Review of the Meteorological Service of the Department of Marine and Fisheries, and show the monthly precipitation at Enderby. The mean precipitation over the whole drainage area is probably considerably higher than the precipitation at Enderby.

The total mean annual precipitation at Enderby for a period of eight years is given as 20·71 inches.

SOUTH SIMILKAMEEN RIVER (2063).

Location.—At Princeton, Water District No. 4.

Records Available.—May 14 to December 19, 1914.

Drainage Area.—Four hundred and forty square miles.

Gauge.—Standard chain gauge situated on the highway bridge, read by J. J. Priest of Princeton.

Channel.—Average width of channel at measuring section is about 170 feet. Above section channel is curved for about 200 feet and straight for about 100 feet below station. Bed of stream is of gravel, with a few boulders, and not liable to shift.

Discharge Measurements.—Made with cable and 30-pound weight. The gauge-height discharge curve is very well rated by well-distributed meterings.

Winter Flow.—No winter records have been made on this stream, but partial ice conditions are believed to exist during January and February.

Accuracy.—High results compiled from a well-rated curve.

SOUTH SIMILKAMEEN.

Two branches, Pasayten river and Roche river, unite to form the South Similkameen river. The Pasayten is about 25 miles long. It heads among the high mountains of the Cascade range, south of the border, and flows due north to the junction. It is a rapid stream flowing through a narrow deep valley. The Roche river heads in six branches in the Hogameen range, which joins the divide between the Skagit and the South Similkameen rivers. It pursues a northeasterly course to the junction through a wide flat valley, whose sides slope easily back to a height of 2,000 feet above the river. From the junction the South Similkameen flows due north for 25 miles to its confluence with the Tulameen at Princeton to form the Similkameen river. In this distance it is joined by Copper creek and Whipsaw creek from the west, and several small unnamed creeks.

From the junction of the Roche and the Pasayten to the confluence of Whipsaw creek, a distance of 18 miles, the South Similkameen flows through a deep narrow canyon on a grade of over 40 feet to the mile. Good power sites are numerous. Below Whipsaw creek to the mouth the grade is flatter and the valley wider.

The area of the drainage basin above the mouth is 440 miles, covering a rough mountainous country of rugged scenic beauty. The new motor road connecting Princeton with the coast follows the valley of the South Similkameen and Roche river across the headwaters of the Skagit and down Silver creek to the Fraser near Hope. It is at present under construction.

Large deposits of copper occur on Copper mountain, 10 miles south of Princeton. The British Columbia Copper Company has large holdings here and is doing some development work.

A gauging station was established on the South Similkameen near the mouth on May 14, 1914. Six discharge measurements and daily gauging were taken during the season.

DISCHARGE MEASUREMENTS of South Similkameen River at Princeton, 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
May 13........	K. G. Chisholm..............	1505	192	476	7·33	3·88	3,490
June 15........	"	1913	191	511	6·25	4·00	3,194
" 22........	"	1913	191	380	4·74	3·31	1,799
July 27....	"	1913	106	117	3·58	1·88	419
Sept 2.....	"	1913	112	145	1·02	1·23	149
Nov 28	"	1673	125	121	3·19	1·85	386

DAILY GAUGE HEIGHT AND DISCHARGE of South Similkameen River at Princeton, for 1914.

Day	May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft
1			4·05	3,665
2			4·67	6,037
3			4·62	5,832
4			3·97	3,407
5			3·71	2,661
6			3·51	2,187
7			3·31	1,803
8			3·25	1,705
9			3·22	1,657
10			3·20	1,625
11			3·14	1,541
12			3·31	1,803
13			3·69	2,610
14			3·80	2,900
15	4·46	5,178	4·00	3,500
16	4·60	5,750	4·23	4,291
17	4·40	4,935	4·19	4,115
18	4·25	4,365	4·00	3,500
19	3·98	3,438	3·95	2,345
20	4·07	3,731	3·70	2,635
21	3·97	3,407	3·42	2,005
22	3·98	3,438	3·27	1,757
23	4·08	3,764	3·03	1,397
24	4·37	4,820	2·98	1,337
25	4·10	3 830	3·03	1,397
26	3·82	2,958	3·07	1,447
27	3·69	2,610	3·17	1,584
28	3·46	2,085	3·12	1,515
29	3·24	1,689	3·11	1,499
30	3·38	1,929	3·16	1,569
31	3·38	1,929		

DAILY GAUGE HEIGHT AND DISCHARGE of South Similkameen River at Princeton, for 1914.

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3·33	1,839	1·73	335	1·23	144	1·40	200	1·64	293	1·47	224
2	3·30	1,785	1·70	320	1·23	144	1·38	193	1·75	345	1·42	207
3	3·25	1,705	1·68	311	1·23	144	1·38	193	1·82	381	1·50	235
4	3·12	1,513	1·61	280	1·22	141	1·35	182	1·84	392	1·55	255
5	3·00	1,360	1·61	280	1·20	135	1·32	172	1·95	455	1·50	235
6	2·91	1,256	1·62	284	1·20	135	1·30	165	1·82	381	1·45	217
7	2·86	1,201	1·61	280	1·30	165	1·32	172	1·67	306	1·45	217
8	2·73	1,065	1·61	280	1·45	217	1·30	165	1·60	275	1·40	200
9	2·68	1,017	1·61	280	1·48	228	1·35	182	1·60	275	1·22	141
10	2·68	1,017	1·60	275	1·40	200	1·42	207	1·62	284	1·20	135
11	2·65	990	1·59	271	1·40	200	1·50	235	1·65	298	1·20	135
12	2·65	990	1·57	263	1·38	193	1·50	235	1·72	330	1·20	135
13	2·67	1,008	1·54	251	1·35	182	1·45	217	1·72	330	1·20	135
14	2·66	999	1·54	251	1·35	182	1·42	207	1·68	311	2·15	580
15	2·51	864	1·52	243	1·38	193	1·35	182	1·50	235	2·15	580
16	2·42	787	1·48	228	1·35	182	1·32	172	1·5	251	2·20	615
17	2·35	730	1·48	228	1·35	182	1·32	172	1·60	275	2·20	615
18	2·32	706	1·47	224	1·40	200	1·34	179	1·52	243	2·20	615
19	2·30	690	1·47	224	1·50	235	1·51	263	1·45	217	2·20	615
20	2·20	615	1·46	221	1·58	267	1·52	243	1·45	217	....	.....
21	2·14	573	1·52	243	1·50	235	1·47	224	1·50	235	....	....
22	2·10	545	1·45	217	1·45	217	1·45	217	1·56	259	....	....
23	2·05	515	1·41	203	1·40	200	1·42	207	1·65	298	....	....
24	2·00	485	1·39	197	1·38	193	1·42	207	1·70	320	....	....
25	1·82	381	1·35	182	1·40	200	1·40	200	1·78	360	....	....
26	1·95	455	1·32	172	1·42	207	1·40	200	1·90	425	....	....
27	1·90	425	1·30	165	1·50	235	1·36	186	1·90	425	....	....
28	1·87	408	1·27	156	1·58	267	1·35	182	1·85	397	....	....
29	1·75	345	1·25	150	1·52	243	1·35	182	1·70	320	....	....
30	1·78	360	1·24	147	1·40	200	1·45	217	1·50	235	....	....
31	1·78	360	1·23	144	....	....	1·60	275	....	....	....	....

MONTHLY DISCHARGE of South Similkameen River at Princeton, for 1914.

(Drainage area, 440 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage [illegible]	Total in acre-feet.
June	6,037	1,337	2,544·4	5·5	6·1	151,404
July	1,839	345	870·6	1·9	2·2	53,531
August	335	144	235·0	0·5	0·6	14,450
September	267	135	195·5	0·44	0·49	11,633
October	275	165	201·0	0·46	0·5	12,359
November	455	217	312·2	0·71	0·79	18,577
The period	6,037	135	726·4	1·58	10·68	261,954

NOTE.—Mean annual precipitation probably varies from 15 inches near the stream's confluence with the Tulameen river to 50 inches at its source on the Skagit River divide.

Ice conditions existed subsequent to December 19.

TULAMEEN RIVER (2062).

Location.—At Coalmont, Water District No. 4.

Records Available.—May 15 to October 3, 1914.

Drainage Area.—Four hundred square miles.

Gauge.—Chain gauge. Brass jack chain and 3-pound sash weight on downstream side of bridge at measuring station, read by J. J. Currie.

Channel.—Straight for about 700 feet at measuring section. Bed of stream of clean gravel and permanent. Average width about 100 feet.

Discharge Measurements.—The gauge-height discharge curve is fairly well rated by well-distributed meterings.

Winter Flow.—No winter records have been made. Ice conditions prevail on this river during the latter part of December, January and February.

Accuracy.—Fairly high, results compiled from a well-rated curve.

TULAMEEN RIVER.

The Tulameen river is one of the largest tributaries of the Similkameen. It rises in many small branches in the eastern slopes of the Hope Range, whose summits are over 7,000 feet in altitude, and joins the Similkameen at Princeton at an elevation of 2,100 feet, after a course of 45 miles.

The tributaries entering from the right going upstream are China creek, Cook creek, Otter creek, Bear creek, Eagle creek, and Siwash creek. Otter creek is the largest tributary. It flows in from the north through a broad deep valley, joining at the village of Tulameen, 16 miles from Princeton. From the left going upstream are Granite creek, Cedar creek, Slate creek, and Champion creek. The largest and most important of these, because of the gold and platinum deposits found in its bed, is Granite creek, which flows in at the village of Granite Creek, 10 miles up the Tulameen valley from Princeton. In 1885, on the discovery of gold in Granite creek, the Granite Creek rush took place. In 1886 the village of Granite Creek had a population of over 2,000, and in that year $193,000 worth of gold and platinum were washed out of the gravel of the creek. Since 1888 placer mining has been on the decline, and at present the population of Granite Creek consists of five or six families.

There are valuable deposits of coal, copper, and gold in the district. Two coal mines are at present working on a small scale, at Princeton and at Coalmont. The Kettle Valley and Great Northern railroads connecting this country with Vancouver, which are now near completion, should give rise to an era of development and progress. The amount of arable land is practically negligible. The valleys of the river and its tributaries, with the exception of the Tulameen for 3 miles between Slate creek and Otter creek, are very narrow. They are, in fact, little better than deep narrow canyons. The valley of the Otter and the portion of the Tulameen mentioned above, which are much wider, contain some good land. It is nearly all homesteaded. The altitude is over 2,700 feet, and although this is below the limit of cultivation in other parts of the Interior Plateau region, yet wheat cannot be successfully grown.

The climate over the drainage basin of the Tulameen and its tributaries is variable, depending on the locality. At Princeton the mean annual precipitation is 13 inches. At Coalmont and Tulameen and in the Otter valley it is probably not much greater than this. In the higher altitudes and on the eastern slopes of the Hope mountains at the sources of the Tulameen it varies from 20 to 40 inches per annum. Temperatures are not extreme, and are as a rule lower than the Okanagan country. The yearly average is about 45° F. In Bulletin 27 of the Bureau of Provincial Information, the maximum is shown as being 101° in 1897 and 1904, and the minimum as 45° in 1907.

The current of the Tulameen is swift except in the three miles between Slate and Otter creek, where it meanders through a valley about one-half mile wide, at grade of 29 feet to the mile. Otter creek has a peculiarly sluggish current for a mountain stream. For a distance of 8 miles north from the mouth it has an average grade of 12 feet to the mile. About 4 miles of this distance is occupied by lakes. Above Slate creek the Tulameen has a grade of about 100 feet to the mile, and rushes through a narrow steep-sided canyon. Its tributaries, excepting the Otter, are very swift and occupy deep V-shaped valleys. The country is heavily wooded on the upper slopes. On the lower slopes the trees grow in more open order. Fir, yellow pine, lodgepole pine, and poplar predominate.

A regular gauging station was established at Coalmont on May 14, 1914. Records are available from that date.

DISCHARGE MEASUREMENTS of Tulameen River at Coalmont, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Nov. 16..	E. M. Dann & K. G. Chisholm	1,505	136	228	3·76	—	846[1]
1914.							
May 14	K. G. Chisholm..	1,505	143	601·0	8·82	4·03	5,300
June 14...	"	1,913	118	387·0	4·60	2·50	1,778
" 19	"	1,913	118	333·0	3·84	2·10	1,277
July 26	"	1,913	80	130·0	1·05	0·13	137
Sept 4	"	1,913	80	95·5	0·41	−0·30	39[2]
Nov 25	"	1,673	102	181·0	1·73	0·63	314

[1] Measurement made at Princeton before regular station was established

[2] Not at regular section.

DAILY GAUGE HEIGHT AND DISCHARGE of Tulameen River near Coalmont, for 1914.

DAY.	May.		June	
	Gauge Height.	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			3·00	[illegible],660
2			3·10	2,870
3			3·00	2,660
4			2·75	2,185
5			2·35	1,575
6			2·20	1,390
7			2·05	1,230
8			2·00	1,180
9			1·95	1,135
10			2·00	1,180
11			2·10	1,280
12			2·50	1,780
13			2·55	1,855
14			2·65	2,015
15	3·80	4,640	2·75	2,185
16	3·80	4,640	2·95	2,560
17	3·35	3,450	2·65	2,015
18	3·35	3,450	2·35	1,575
19	3·35	3,450	2·05	1,230
20	3·30	3,325	1·80	1,005
21	3·30	3,325	1·60	850
22	3·25	3,205	1·60	850
23	3·55	3,960	1·50	780
24	[illegible]·70	4,365	1·60	850
25	[illegible]·30	3,325	1·75	965
26	2·70	2,100	1·55	815
27	2·60	1,935	1·65	885
28	2·55	1,850	1·40	715
29	2·10	1,280	1·50	780
30	2·30	1,510	1·60	850
31	2·70	2,100		

DAILY GAUGE HEIGHT AND DISCHARGE of Tulameen River near Coalmont, for 1914.

Day.	July.		August.		September.		October.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·45	745	−0·05	90	..	. .	0·10	125
2	1·35	685	−0·15	70	. . . .	. . . .	−0·10	80
3	1·54	45	−0·15	70	. . . .	. . . .	0	100
4	1·30	655	−0·15	70	−0·30	40	0	100
5	1·15	565	−0·15	70	−0·30	40	0	100
6	0·95	455	−0·15	70	−0·30	40	0	100
7	0·95	455	−0·15	70	−0·30	40	0	100
8	0·95	455	−0·05	90	−0·30	40	0	100
9	0·85	405	−0·05	90	−0·20	60	0	100
10	0·90	430	−0·15	70	0·10	125	0	100
11	0·90	430	−0·15	70	0·10	125	0	100
12			−0·15	70	−0·10	80	0·10	125
13	0·50	250	−0·15	70	0·10	125	0·10	125
14	0·50	250	−0·15	70	0·20	150	0	100
15	0·60	290	−0·15	70	0	100	0	100
16	0·50	250	−0·15	70	−0·10	80	0	100
17	0·40	215			−0·10	80	0	100
18	0·40	215			0·10	125	0·10	125
19	0·40	215			0·10	125	0·20	150
20	0·40	215			0·10	125	0·20	150
21	0·25	165			0·10	125	0·10	125
22	0·25	165			0·10	125	0·20	150
23	0·15	135			−0·20	60	0	100
24	0·15	135			−0·20	60	−0·20	60
25	0·15	135			−0·10	80	−0·10	80
26	0·10	125			0·10	125	0	100
27	0·10	125			0	100	0	100
28	0·10	125			0·10	125	0·10	125
29	0·00	100			−0·10	80	0·20	150
30	−0·10	80			0	100	0·10	125
31	−0·10	80	..				0·30	180

MONTHLY DISCHARGE of Tulameen River near Coalmont, for 1914.

(Drainage area, 400 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May	4,640	1,280	3,053·5	7·63	8·80	187,753
June	2,870	780	1,463·5	3·66	4·08	87,086
July	745	80	309·8	0·77	0·89	19,050
August	90	70	73·7	0·18	0·21	4,531
September	125	40	91·8	0·23	0·26	5,462
October	180	60	112·1	0·28	0·32	6,893
The period	4,640	40	850·7	2·12	14·[illegible]	310,775

Note.—Mean annual precipitation at the stream's confluence with the South Similkameen river is probably 15 inches; at the head waters of Granite creek and Tulameen river proper it is probably 50 inches, while at the head of Otter creek it is probably 20 to 30 inches per annum.
Ice conditions existed during part of November and December.

THOMPSON RIVER AT CHASE, B.C. (2042).

Location.—Section 35, township 21, range 13, west 6th meridian.

Records Available.—April 22 to July 31, 1911; April 10 to December 31, 1912; April 12 to December 31, 1913; January 1 to 27, March 24 to December 31, 1914.

Drainage Area.—Seven thousand square miles.

Gauge.—A vertical staff gauge is used and read daily by Mr. F. J. Cook of the Adams River Lumber Company, Chase, B.C.

Channel.—Above the measuring section river broadens out into Little Shuswap lake. Below section river is straight for 200 yards.

Discharge Measurements.—Eleven well-distributed measurements have been made during 1911, 1912, and 1913. Measurements are made from cable and boat.

Winter Conditions.—The Thompson, at Chase, remains partially open throughout the year except during severe winters.

Accuracy.—The accuracy of returns is considered to be high, and should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Thompson River, at Chase, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec
Mar. 31	E. M. Dann & K. G. Chisholm	1505	358	3,610	0·77	2·58	[illegible]

For further hydrographic data see Water Resources Paper Nos. 1 and 8.

Daily Gauge Height and Discharge of Thompson River, near Chase, B.C., for 1914.

Day	January		February		March		April		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	2·95	3,390				2,940	2·50	2,720	5·20	9,160	8·85	24,225
2	2·95	3,390				2,940	2·50	2,720	5·35	9,670	8·85	24,225
3	2·95	3,390				2,940	2·60	2,840	5·60	10,540	8·95	24,675
4	2·95	3,390				2,940	2·60	2,840	5·85	11,445	9·15	25,575
5	2·95	3,390				2,830	2·60	2,840	6·00	12,000	9·25	26,025
6	2·95	3,390				2,830	2·60	2,840	6·15	12,600	9·30	26,250
7	2·95	2,390				2,830	2·60	2,840	6·25	13,000	9·30	26,250
8	2·95	3,390				2,830	2·60	2,840	6·35	13,400	9·35	26,475
9	2·95	3,390				2,830	2·65	2,910	6·40	13,600	9·40	26,700
10	2·95	3,390				2,830	2·75	3,050	6·50	14,000	9·40	26,700
11	2·95	3,390				2,830	2·85	3,210	6·60	14,400	9·40	26,700
12	3·05	3,570				2,830	3·05	3,570	6·75	15,000	9·50	27,150
13	3·05	3,570				2,830	3·20	3,840	6·85	15,400	9·55	27,375
14	3·05	2,570				2,730	3·35	4,120	7·05	16,200	9·60	27,600
15	3·05	3,570				2,730	3·40	4,225	7·25	17,025	9·75	28,275
16	3·05	3,570				2,730	3·55	4,505	7·35	17,475	9·85	28,725
17	3·05	3,570				2,730	3·65	4,795	7·65	18,825	10·00	29,450
18	3·05	3,570				2,730	3·85	5,275	7·75	19,275	10·05	29,700
19	3·05	3,570				2,730	4·00	5,650	7·90	19,950	10·10	29,950
20	3·05	3,570				2,730	4·05	5,775	8·05	20,625	10·20	30,450
21	3·05	3,570				2,730	4·15	6,025	8·15	21,075	10·20	30,450
22	3·05	3,570				2,730	4·30	6,430	8·25	21,525	10·20	30,450
23	3·05	3,570				2,730	4·40	6,710	8·35	21,975	10·15	30,200
24	3·05	3,570			2·50	2,720	4·40	6,710	8·55	22,875	10·10	29,950
25	3·05	3,570			2·50	2,720	4·50	7,000		23,550	10·10	29,950
26	3·05	3,570			2·50	2,720	4·65	7,450	8·80	24,000	10·10	29,950
27	2·95	3,390	2·75	3,050	2·50	2,720	4·80	7,910	8·80	24,000	10·10	29,950
28					2·50	2,720	4·90	8,220	8·90	24,450	10·10	29,950
29					2·50	2,720	5·05	8,685	8·90	24,450	10·10	29,950
30					2·50	2,720	5·15	9,000	8·90	24,450	10·10	29,950
31					2·50	2,720			8·90	24,450		

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River, near Chase, B.C., for 1914—*Concluded.*

Day	July.		August		September.		October.		November.		December
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height
1	10·10	29,950	7·05	16,200	4·60	7,300	4·00	5,650	4·50	7,000	4·45
2	10·10	29,950	7·00	16,000	4·60	7,300	4·00	5,650	4·60	7,300	4·40
3	10·10	29,950	6·85	15,400	4·60	7,300	4·00	5,650	4·60	7,300	4·40
4	10·10	29,950	6·75	15,000	4·50	7,000	4·00	5,650	4·65	7,450	4·35
5	10·10	29,950	6·55	14,200	4·50	7,000	4·00	5,650	4·70	7,600	4·30
6	10·10	29,950	6·45	13,800	4·50	7,000	3·90	5,400	4·75	7,755	4·30
7	10·10	29,450	6·30	13,200	4·50	7,000	3·90	5,400	4·80	7,910	4·30
8	9·90	28,950	6·25	13,000	4·40	6,710	3·90	5,400	4·80	7,910	4·30
9	9·80	28,500	6·20	12,800	4·40	6,710	3·90	5,400	4·80	7,910	4·20
10	9·65	27,825	6·10	12,400	4·40	6,710	3·90	5,400	4·90	8,220	4·20
11	9·50	27,150	5·95	11,815	4·40	6,710	3·90	5,400	4·90	8,220	4·10
12	9·45	26,925	5·85	11,445	4·40	6,710	3·90	5,400	4·90	8,220	4·10
13	9·40	26,700	5·75	11,075	4·30	6,430	3·90	5,400	4·90	8,220	4·00
14	9·30	26,250	5·70	10,890	4·25	6,290	4·00	5,650	4·90	8,220	4·00
15	9·30	26,250	5·65	10,715	4·20	6,150	4·00	5,650	4·90	8,220	4·00
16	9·30	26,250	5·60	10,540	4·20	6,150	4·00	5,650	4·90	8,220	4·00
17	9·25	26,025	5·50	10,190	4·10	5,900	4·00	5,650	4·80	7,910	3·90
18	9·15	25,575	5·40	9,840	4·10	5,900	4·10	5,900	4·80	7,910	3·90
19	9·05	25,125	5·30	9,500	4·00	5,650	4·15	6,025	4·80	7,910	3·80
20	8·90	24,450	5·20	9,160	4·00	5,650	4·20	6,150	4·80	7,910	3·75
21	8·75	23,775	5·20	9,160	4·00	5,650	4·30	6,430	4·75	7,755	3·70
22	8·70	23,550	5·15	9,000	4·00	5,650	4·30	6,430	4·70	7,600	3·70
23	8·60	23,100	5·10	8,840	3·95	5,525	4·30	6,430	4·70	7,600	3·70
24	8·45	22,425	5·00	8,530	3·90	5,400	4·35	6,570	4·65	7,450	3·60
25	8·25	21,525	4·90	8,220	3·90	5,400	4·40	6,710	4·60	7,300	3·60
26	8·05	20,625	4·85	8,065	3·90	5,400	4·40	6,710	4·60	7,300	3·55
27	7·85	19,725	4·80	7,910	3·90	5,400	4·40	6,710	4·50	7,000	3·50
28	7·65	18,825	4·70	7,600	3·90	5,400	4·40	6,710	4·50	7,000	3·50
29	7·45	17,925	4·65	7,450	4·00	5,650	4·40	6,710	4·50	7,000	3·50
30	7·25	17,025	4·60	7,300	4·00	5,650	4·40	6,710	4·50	7,000	3·50
31	7·20	16,800	4·60	7,300			4·45	6,855			3·50

MONTHLY DISCHARGE of Thompson River, at Chase, B.C., for 1914.

(Drainage area, 7,000 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF
	Maximum	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.
January	3,570	3,390	3,490	0·5	0·6
February	......	......	3,000	0·4	0·4
March	2,940	2,720	2,783	0·4	0·4
April	9,000	2,720	4,920	0·7	0·8
May	24,450	9,160	17,783	2·5	2·9
June	30,450	24,225	28,107	4·0	4·5
July	29,950	16,800	25,175	3·6	4·1
August	16,200	7,300	10,856	1·5	1·7
September	7,300	5,400	6,223	0·9	1·0
October	6,855	5,400	5,971	0·9	0·9
November	8,220	7,000	7,677	1·1	1·2
December	6,855	4,450	5,521	0·8	0·9
The year	30,450	2,720	10,125	1·4	19·4

NOTE.—Flow for February estimated. River under entire or partial ice conditions.

Precipitation probably varies from 20 inches per annum at Chase to 50 inches at the headwaters of streams to Shuswap lake.

BARNES CREEK (2001).

Location.—Section 23, township 20, range 24, west 6th meridian.

Records Available.—April 26 to September 14, 1912; May 1 to December 14, 1913; April 1 to December 8, 1914.

Drainage Area.—Thirty-eight square miles.

Gauge.—Standard vertical staff gauge, graduated in feet and tenths, and read daily by C. Crossley.

Channel.—Channel straight at measuring section. Velocity medium. Bed of stream permanent.

Discharge Measurements.—Discharge measurements made by wading at all stages, except very high water.

Winter Flow.—Ice conditions prevail on this stream during January, February, and March.

Accuracy.—The accuracy of results is considered to be very high, the curve being well defined, and returns should fall within 5 per cent.

DISCHARGE MEASUREMENTS of Barnes Creek above Barnes Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July 6	C. B. Corbould	1915	5	4	0·75	0·35	3·0

Station rated during 1911 and 1912. Hydrographer notes that on July 6 no water was running into Barnes lake, it was all going down the gulch to the Tiffin ranch, and other lands just east of Ashcroft. He estimates that about ·5 sec.-feet is flowing out of Barnes lake and joining Barnes creek one-quarter mile below.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Barnes Creek, Barnes Lake, for 1914

Day	April.		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	0·30	2·0	0·70	19·0	0·80	
2	0·32	2·4	0·85	31·0	0·80	
3	0·37	3·4	0·90	35·0	0·80	
4	0·42	4·6	0·80	27·0	0·80	
5	0·47	6·1	0·80	27·0	0·80	
6	0·50	7·0	0·80	27·0	0·70	
7	0·50	7·0	0·80	27·0	0·80	
8	0·50	7·0	0·82	28·6	0·80	
9	0·50	7·0	0·93	39·5	0·80	
10	0·50	7·0	1·20	63·0	0·80	
11	0·50	7·0	1·40	83·0	0·80	
12	0·50	7·0	1·40	84·0	0·80	
13	0·52	8·0	1·40	83·0	0·80	
14	0·62	13·4	1·45	88·0	0·80	
15	0·62	13·4	1·50	93·0	0·70	
16	0·60	12·0	1·40	83·0	0·70	
17	0·60	12·0	1·32	75·0	0·60	
18	0·60	12·0	1·30	73·0	0·50	
19	0·60	12·0	1·15	58·5	0·50	
20	0·60	12·0	1·10	54·0	0·50	
21	0·50	7·0	1·00	44·0	0·50	
22	0·50	7·0	1·00	44·0	0·60	
23	0·50	7·0	1·00	44·0	0·60	
24	0·50	7·0	1·10	54·0	0·60	
25	0·50	7·0	1·00	44·0	0·55	
26	0·50	7·0	1·00	44·0	0·50	
27	0·50	7·0	1·00	44·0	0·50	
28	0·55	9·5	0·90	35·0	0·50	
29	0·60	12·0	0·80	27·0	0·50	
30	0·65	15·5	0·80	27·0	0·50	
31			0·80	27·0		

DAILY GAUGE HEIGHT AND DISCHARGE of Barnes Creek, near Barnes Lake, for 1914—*Concluded.*

DAY.	July		August		September.		October.		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·50	7·0	0·30	2·0	0·20	0·7	0·40	4·0	0·40	4·0	0·45	5·5
2	0·50	7·0	0·30	2·0	0·20	0·7	0·40	4·0	0·40	4·0	0·45	5·5
3	0·40	4·0	0·30	2·0	0·20	0·7	0·40	4·0	0·40	4·0	0·45	5·5
4	0·40	4·0	0·30	2·0	0·20	0·7	0·40	4·0	0·40	4·0	0·45	5·5
5	0·40	4·0	0·30	2·0	0·20	0·7	0·40	4·0	0·40	4·0	0·45	5·5
6	0·40	4·0	0·30	2·0	0·20	0·7	0·40	4·0	0·40	4·0	0·45	5·5
7	0·40	4·0	0·30	2·0	0·22	1·0	0·40	4·0	0·40	4·0	0·50	7·0
8	0·45	5·5	0·30	2·0	0·30	2·0	0·40	4·0	0·40	4·0	0·50	7·0
9	0·50	7·0	0·30	2·0	0·35	3·0	0·40	4·0	0·40	4·0		
10	0·50	7·0	0·30	2·0	0·35	3·0	0·40	4·0	0·40	4·0		
11	0·50	7·0	0·30	2·0	0·35	3·0	0·40	4·0	0·40	4·0		
12	0·50	7·0	0·30	2·0	0·35	3·0	0·40	4·0	0·40	4·0		
13	0·50	7·0	0·30	2·0	0·32	2·4	0·40	4·0	0·40	4·0		
14	0·50	7·0	0·30	2·0	0·30	2·0	0·40	4·0	0·42	4·6		
15	0·50	7·0	0·30	2·0	0·30	2·0	0·45	5·5	0·45	5·5		
16	0·50	7·0	0·30	2·0	0·30	2·0	0·45	5·5	0·47	6·1		
17	0·50	7·0	0·30	2·0	0·32	2·4	0·45	5·5	0·50	7·0		
18	0·40	4·0	0·30	2·0	0·37	3·4	0·50	7·0	0·50	7·0		
19	0·40	4·0	0·30	2·0	0·40	4·0	0·50	7·0	0·50	7·0		
20	0·40	4·0	0·30	2·0	0·40	4·0	0·50	7·0	0·50	7·0		
21	0·40	4·0	0·25	1·4	0·40	4·0	0·50	7·0	0·50	7·0		
22	0·40	4·0	0·25	1·4	0·40	4·0	0·50	7·0	0·50	7·0		
23	0·40	4·0	0·25	1·4	0·40	4·0	0·50	7·0	0·50	7·0		
24	0·40	4·0	0·22	1·0	0·40	4·0	0·50	7·0	0·50	7·0		
25	0·40	4·0	0·20	0·7	0·40	4·0	0·45	5·5	0·50	7·0		
26	0·40	4·0	0·20	0·7	0·40	4·0	0·45	5·5	0·50	7·0		
27	0·40	4·0	0·20	0·7	0·35	3·0	0·40	4·0	0·50	7·0		
28	0·40	4·0	0·20	0·7	0·35	3·0	0·40	4·0	0·50	7·0		
29	0·40	4·0	0·20	0·7	0·40	4·0	0·40	4·0	0·50	7·0		
30	0·35	3·0	0·20	0·7	0·40	4·0	0·40	4·0	0·50	7·0		
31	0·35	3·0	0·20	0·7	..	..	0·40	4·0				

MONTHLY DISCHARGE of Barnes Creek, near Barnes Lake, for 1914.

Drainage area, 38 square miles.

MONTH	DISCHARGE IN SECOND FEET				RUN-OFF	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet
April	15·5	2·0	8·3	0·2	0·2	492
May	93·0	19·0	49·4	1·3	1·5	3,038
June	27·0	7·0	17·6	0·5	0·5	1,048
July	7·0	3·0	5·0	0·1	0·2	310
August	2·0	0·7	1·6	0·04	0·05	98
September	4·0	0·7	2·6	0·1	0·1	154
October	7·0	4·0	4·9	1	0·2	301
November	7·0	4·0	5·5	1	0·2	327
December	7·0	5·5	(for period	Dec. 1 to Dec. 8)		
The period	93·0	0·7	11·8	0·30	2·92	5,768

NOTE.—Winter conditions prevail after December 8.

BONAPARTE RIVER (2003).

Location.—Section 18, township 21, range 24, west 6th meridian.

Records Available.—June 10 to November 6, 1911; March 25 to December 22, 1912; March 30 to December 31, 1913; January 1 to December 9, 1914.

Drainage Area.—Two thousand square miles.

Gauge.—Standard vertical staff gauge read daily by J. G. Collins.

Channel.—Channel straight at measuring section, average width 50 feet. Velocity high.

Discharge Measurements.—Discharge measurements are made by wading, except at high water, when cable carrier is used.

Winter Flow.—Ice conditions prevail on this stream during January and February.

Accuracy.—The accuracy of returns is considered very high, the curve being well defined, and results should fall within 5 per cent.

DISCHARGE MEASUREMENTS of Bonaparte River, near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft
May 22	C. B. Corbould	1673	54	160	6·28	3·23	1,005[1]
July 9	"	1915	48	107	3·3	1·98	35[illegible][2]

[1] Actual gauge height 3·30, gauge sunk 0·07 foot during the winter, thus making actual readings 0·07 too high.
[2] Actual gauge height 2·05.
For further hydrographic data see Water Resources Papers Nos 1 and 8.

DAILY GAUGE HEIGHTS AND DISCHARGE of Bonaparte River, near Collins Ranch, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·03	70	1·03	70	1·03	70	1·38	164·5	3·08	841	2·83	651
2	0·98	56	0·98	56	1·03	70	1·33	150·5	3·13	889	2·83	651
3	0·98	56	0·98	56	1·03	70	1·33	150·5	2·93	717·5	2·78	622
4	1·03	70	0·98	56	1·08	83	1·38	164·5	3·03	795	2·78	622
5	1·08	83	0·98	56	1·08	83	1·38	164·5	3·13	889	2·78	622
6	1·08	83	0·98	56	1·08	83	1·63	232·5	3·23	993·5	2·78	622
7	1·13	96	0·98	56	1·08	83	1·68	246·5	3·33	1,109	2·78	622
8	1·13	96	0·98	56	1·08	83	1·73	260·0	3·33	1,109	2·78	622
9	1·08	83	0·98	56	1·13	96	1·78	273·5	3·43	1,232·5	2·73	597
10	1·03	70	0·98	56	1·13	96	1·88	302	3·53	1,354	2·78	622
11	1·13	96	0·98	56	1·18	110	1·93	317	3·63	1,482·5	2·83	651
12	1·13	96	0·98	56	1·18	110	2·03	347	3·68	1,553·5	2·88	683
13	1·13	96	0·98	56	1·18	110	2·13	377	3·73	1,625	2·93	717·5
14	1·13	96	0·93	42·5	1·23	123	2·23	408	3·73	1,625	2·93	717·5
15	1·[illegible]	83	0·93	42·5	1·28	137	2·43	475·5	3·83	1,768·5	2·98	753·5
16	1·08	83	0·93	42·5	1·28	137	2·58	532	3·83	1,768·5	2·98	753·5
17	1·18	110	0·93	42·5	1·33	150·5	2·68	573·5	3·73	1,625	2·83	651·0
18	1·23	123	0·93	42·5	1·38	164·5	2·83	651	3·63	1,482·5	2·73	597
19	1·13	96	0·93	42·5	1·38	164·5	2·83	651	3·53	1,354	2·63	552·5
20	1·08	83	0·93	42·5	1·48	191·5	3·03	795	3·43	1,232·5	2·58	532
21	1·08	83	0·93	42·5	1·[illegible]	205	2·83	651	3·23	993·5	2·53	512
22	1·08	83	0·93	42·5	1·[illegible]	205	2·78	622	3·28	1,049·5	2·43	475·5
23	1·08	83	0·93	42·5	1·48	191·5	2·78	622	3·28	1,049·5	2·43	475·5
24	1·[illegible]	83	0·93	42·5	1·43	178·0	2·73	597	3·33	1,109	2·43	475·5
25	1·[illegible]	83	0·98	56·0	1·33	150·5	2·73	597	3·28	1,049·5	2·48	493
26	1·03	70	0·98	56·0	1·23	123	2·73	597	3·23	993·5	2·48	493
27	1·03	70	0·98	56·0	1·33	150·5	2·73	597	3·18	940	2·48	493
28	1·03	70	1·03	70	1·33	150·5	2·78	622	3·13	889	2·43	475·5
29	1·03	70	....	....	1·38	164·5	2·83	651	3·03	795	2·43	475·5
30	1·[illegible]	70	......	....	1·43	178	2·93	717·5	2·88	683	2·43	475·5
31	1·03	70	...	......	1·43	178	..		[illegible]·83	651	..	....

DAILY GAUGE HEIGHT AND DISCHARGE of Bonaparte River, at Collins Ranch, for 1914.—*Con.*

DAY.	July.		August.		September.		October.		November.		December	
	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec. ft
1	2·38	458	1·53	205	0·98	56	1·13	96	1·03	70	1·13	96
2	2·33	440·5	1·48	191·5	0·98	56	1·08	83	1·03	70	1·13	96
3	2·28	423·5	1·43	178	0·93	42·5	1·08	83	1·03	70	1·13	96
4	2·23	408	1·38	164·5	0·93	42·5	1·08	83	1·03	70	1·13	96
5	2·18	392	1·33	150·5	0·93	42·5	1·08	83	1·08	83	1·13	96
6	2·13	377	1·33	150·5	0·93	42·5	1·08	83	1·08	83	1·13	96
7	2·08	362	1·28	137	0·93	42·5	1·08	83	1·08	83	1·13	96
8	2·03	347	1·28	137	0·98	56·0	1·08	83	1·08	83	1·23	103
9	1·98	332	1·23	123	0·98	56·0	1·08	83	1·08	83	1·28	137
10	1·93	317	1·23	123	0·93	42·5	1·13	96	1·03	70	....	
11	1·88	302	1·23	123	1·13	96	1·13	96	1·03	70	....	
12	1·83	288	1·23	123	1·08	83	1·13	96	1·03	70	....	
13	1·83	288	1·23	123	1·13	96	1·08	83	1·08	83		
14	1·78	273·5	1·18	110	1·13	96	1·08	83	1·08	83	....	
15	1·83	288	1·18	110	1·13	96	1·08	83	1·08	83	....	
16	1·78	273·5	1·18	110	1·18	110	1·03	70	1·08	83		
17	1·78	273·5	1·18	110	1·18	110	1·03	70	1·13	96	....	
18	1·73	260	1·18	110	1·23	123	1·03	70	1·13	96	....	
19	1·68	246·5	1·18	110	1·23	123	1·03	70	1·13	96	....	
20	1·73	260	1·13	96	1·28	137	1·03	70	1·13	96	....	
21	1·68	246·5	1·13	96	1·28	137	1·03	70	1·18	110	....	
22	1·68	246·5	1·13	96	1·23	123	1·03	70	1·18	110	....	
23	1·63	232·5	1·13	96	1·23	123	1·03	70	1·23	123	....	
24	1·63	232·5	1·08	83	1·18	110	1·03	70	1·23	123	....	
25	1·63	232·5	1·08	83	1·18	110	1·03	70	1·18	110	....	
26	1·68	246·5	1·08	83	1·13	96	1·03	70	1·18	110	....	
27	1·63	232·5	1·03	70	1·13	96	1·03	70	1·18	110	....	
28	1·63	232·5	1·03	70	1·13	96	1·03	70	1·18	110	....	
29	1·58	218·5	1·03	70	1·13	96	1·03	70	1·13	96	....	
30	1·58	218·5	0·98	56	1·13	96	1·03	70	1·13	96	..	
31	1,53	205·0	0·98	56		.....	1·03	70				

MONTHLY DISCHARGE of Bonaparte River at Collins Ranch, near Ashcroft, for 1914.

(Drainage area, 2,000 square miles.)

Month.	Discharges in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January	123	56·0	82·6	0·04	0·05	5,079
February	70	42·5	51·7	0·03	0·03	2,871
March	205	70	131·9	0·06	0·07	8,110
April	795	150·5	450·3	0·22	0·25	26,795
May	1,768·5	651	1,149·9	0·57	0·66	70,710
June	753·5	475·5	590·1	0·29	0·32	35,113
July	458	205	295·3	0·15	0·17	18,157
August	205	56	114·3	0·06	0·07	7,028
September	137	42·5	87·7	0·04	0·05	5,218
October	96	70	77·9	0·04	0·05	4,790
November	123	70	90·6	0·04	0·05	5,391
December	137	96	(for period Dec. 1 to Dec. 9.)			
The year	1,768·5	42·5	270 (estimated)	0·13 (estimated)	1·82 (estimated)	195,000 (estimated)

NOTE.—Winter conditions obtained after December 9.

Precipitation varies from a minimum of 5 to a maximum of 25 inches per annum. The low run-off "depth in inches on drainage area" seems to indicate high evaporation losses, and probably an over-estimate of the drainage area, which however, was taken from the best available map.

CRISS CREEK (2007).

Location.—Sec. 32, township 22, range 22, west 6th meridian.

Records Available.—June 14 to September 14, 1912; April 22 to November 21, 1913; April 1 to December 9, 1914.

Drainage Area.—One hundred and fifty square miles.

Gauge.—Standard vertical staff gauge, read daily by W. J. Hoey.

Channel.—The channel at measuring section is straight. Velocity is high Bed of stream composed of gravel and boulders.

Winter Flow.—Ice conditions exist on this stream during January, February, and part of March.

Accuracy.—The accuracy of returns is considered to be very high. The curve is well rated, and results should be within 5 per cent.

DISCHARGE MEASUREMENTS of Criss Creek above Deadman River, for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 24	C. B. Corbould	1673	32	77	5·34	2·05	412
10	C. B. Corbould	1915	23	29·5	0·83	0·35	24·5

Actual gauge height 2·10 gauge sunk ·05 feet during winter, thus making actual reading ·05 too high.
Actual gauge height 0·4
ee measurements 1913, Water Resources Paper No. 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Criss Creek near Hoey's Ranch, for 1914.

DAY.	APRIL.		MAY.		JUNE.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	0·25	18·3	1·45	165·8	1·25	117·0
2	0·25	18·3	1·75	265·0	1·25	117·0
3	0·25	18·3	1·95	360·8	1·30	127·5
4	0·55	29·0	3·15	471·5	1·30	127·5
5	0·65	34·8	2·25	532·5	1·25	117·0
6	0·95	64·2	2·15	471·5	1·25	117·0
7	1·00	71·0	2·10	443·0	1·35	140·0
8	1·05	79·2	1·95	360·8	1·45	165·8
9	1·10	87·5	1·95	360·8	1·55	194·0
10	1·10	87·5	1·95	360·8	1·75	265·0
11	1·15	97·0	1·85	309·5	1·85	309·5
12	1·25	117·0	1·75	265·0	1·85	309·5
13	1·25	117·0	1·75	265·0	1·75	265·0
14	1·25	117·0	1·85	309·5	1·65	227·0
15	1·25	117·0	1·95	360·8	1·55	194·0
16	1·35	140·0	2·25	532·5	1·50	179·0
17	1·35	140·0	2·15	471·5	1·45	165·8
18	1·35	140·0	2·05	415·2	1·35	140·0
19	1·45	165·8	1·95	360·8	1·25	117·0
20	1·45	165·8	1·95	360·8	1·25	117·0
21	1·45	165·8	1·85	309·5	1·25	117·0
22	1·35	140·0	1·85	309·5	1·25	117·0
23	1·25	117·0	1·95	360·8	1·15	97·0
24	1·25	117·0	1·85	309·5	1·15	97·0
25	1·25	117·0	1·75	265·0	1·05	79·2
26	1·25	117·0	1·65	227·0	1·05	79·2
27	1·25	117·0	1·65	227·0	0·95	64·2
28	1·25	117·0	1·60	209·0	0·95	64·2
29	1·25	117·0	1·55	194·0	0·95	64·2
30	1·25	117·0	1·45	165·8	0·95	64·2
31		......	1·35	140·0	......	

DAILY GAUGE HEIGHT AND DISCHARGE of Criss Creek near Hoey's Ranch, for 1914.

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·90	57·5	0·05	13·0	−0·25	6·5	0·10	14·0	0·15	15·5	0·15	15·5
2	0·85	52·2	0·00	12·0	−0·25	6·5	0·15	15·5	0·15	15·5	0·15	15·5
3	0·75	42·5	0·00	12·0	−0·25	6·5	0·15	15·5	0·15	15·5	0·15	15·5
4	0·75	42·5	0·00	12·0	−0·25	6·5	0·15	15·5	0·15	15·5	0·15	15·5
5	0·65	34·8	0·00	12·0	−0·25	6·5	0·15	15·5	0·15	15·5	0·15	15·5
6	0·65	34·8	0·00	12·0	−0·25	6·5	0·15	15·5	0·15	15·5	0·15	15·5
7	0·60	31·5	0·00	12·0	−0·25	6·5	0·15	15·5	0·15	15·5	0·15	15·5
8	0·60	31·5	0·00	12·0	−0·25	6·5	0·15	15·5	0·15	15·5	0·15	15·5
9	0·45	24·5	0·00	12·0	−0·35	4·5	0·15	15·5	0·15	15·5	0·25	18·3
10	0·35	21·0	−0·05	10·8	−0·25	6·5	0·15	15·5	0·15	15·5		
11	0·35	21·0	−0·05	10·8	−0·25	6·5	0·15	15·5	0·15	15·5		
12	0·25	18·3	−0·05	10·8	−0·25	6·5	0·15	15·5	0·15	15·5		
13	0·25	18·3	−0·05	10·8	−0·25	6·5	0·15	15·5	0·15	15·5		
14	0·45	24·5	−0·05	10·8	−0·25	6·5	0·15	15·5	0·15	15·5		
15	0·55	29·0	−0·05	10·8	−0·25	6·5	0·15	15·5	0·15	15·5		
16	0·65	34·8	−0·05	10·8	−0·25	6·5	0·15	15·5	0·15	15·5		
17	0·75	42·5	−0·10	9·5	−0·15	8·5	0·20	17·0	0·15	15·5		
18	0·75	42·5	−0·10	9·5	−0·05	10·8	0·20	17·0	0·15	15·5		
19	0·55	29·0	−0·10	9·5	−0·05	10·8	0·15	15·5	0·15	15·5		
20	0·45	24·5	−0·10	9·5	0·00	12·0	0·15	15·5	0·15	15·5		
21	0·35	21·0	−0·15	8·5	0·05	13·0	0·15	15·5	0·15	15·5		
22	0·25	18·3	−0·05	10·8	0·05	13·0	0·15	15·5	0·15	15·5		
23	0·15	15·5	−0·05	10·8	0·15	15·5	0·15	15·5	0·15	15·5		
24	0·15	15·5	−0·15	8·5	0·25	18·3	0·15	15·5	0·15	15·5		
25	0·15	15·5	−0·20	7·5	0·25	18·3	0·15	15·5	0·15	15·5		
26	0·10	14·0	−0·25	6·5	0·25	18·3	0·15	15·5	0·15	15·5		
27	0·10	14·0	−0·25	6·5	0·25	18·3	0·15	15·5	0·15	15·5		
28	0·10	14·0	−0·25	6·5	0·35	21·0	0·15	15·5	0·15	15·5		
29	0·10	14·0	−0·2	6·5	0·35	21·0	0·15	15·5	0·15	15·5		
30	0·05	13·0	−0·25	6·5	0·35	21·0	0·15	15·5	0·15	15·5		
31	0·05	13·0	−0·25	6·5			0·15	15·5				

MONTHLY DISCHARGE of Criss Creek near Hoey's Ranch, for 1914.

Month	Discharge in Second-Feet				Run-Off.	
	Maximum	Minimum	Mean	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	165·8	18·3	102·2	0·7	0·8	6,081
May	532·5	140	327·7	2·2	2·5	20,149
June	309·5	64·2	145	0·96	1·07	8,628
July	57·5	13·0	26·6	0·18	0·20	1,636
August	13·0	6·5	9·9	0·07	0·08	609
September	21·0	4·5	10·7	0·07	0·08	638
October	17·0	14·0	15·5	0·1	0·1	953
November	15·5	15·5	15·5	0·1	0·1	922
December	18·3	15·5	for period (Dec. 1 to Dec. 9.)			
The period	532·5	4·5	81·6	0·55	4·93	39,616

Note.—Winter conditions prevailed after December 9. No precipitation records are available for the Criss Creek valley. From the general situation and contour of the drainage basin it is thought that climatic conditions are similar to those of Kamloops, where the mean annual precipitation is 10·3 inches.

Officials of the Dominion Forestry Branch state that Criss creek actually rises from Sil-whoia-kun mountain, at a point where Government maps show Tranquille river flowing. If this is verified by later surveys the drainage area of Criss creek shown above (150 square miles) will be much smaller than the actual drainage area of the stream.

COLDWATER RIVER (2006).

Location.—At Merritt, Water District No. 3.

Records Available.—April 17 to August 31, 1913; April 1 to December 6, 1914.

Drainage Area.—Three hundred and sixty square miles.

Gauge.—It is a vertical staff gauge, and is read daily by J. Skimming.

Channel.—The stream is from 50 to 75 feet wide; velocities are medium. Bed of stream is rocky and permanent.

Discharge Measurements.—Are made by wading during low water, and from traffic bridge at high water.

Winter Flow.—Ice conditions exist on this river during January and February.

Accuracy.—Measurements on July 29 appears to indicate that channel shifted during summer of 1914. Results are therefore subject to inaccuracy.

DISCHARGE MEASUREMENTS of Coldwater River at Merritt, for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height	Dis[illegible]
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	[illegible]
Mar. 12	E. M. Dann & K. G. Chisholm	1505	47	73·4	1·11	1·02	[illegible]
May 2	do do	1505	68	244·0	5·86	3·27	[illegible]
July 8	do do	1505	62	151·0	2·78	1·69	[illegible]
July 29	C. B. Corbould	1915	56	90·6	0·96	0·85	[illegible]

For further metering, see Water Resources Paper No. 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Coldwater near Merritt, for 1914.

Day	April		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft
1	0·25	2	2·60	985	3·10	1,340
2	0·27	3	3·15	1,375	3·70	1,775
3	0·30	4	3·80	1,845	3·70	1,775
4	0·42	9	3·45	1,592	3·00	1,265
5	1·57	345	3·05	1,302	2·55	952
6	1·87	510	2·82	1,125	2·30	790
7	2·00	600	2·70	1,055	2·15	692
8	2·13	692	2·72	1,055	2·07	630
9	2·27	757	3·07	1,302	2·10	660
10	2·40	855	3·57	1,665	2·10	660
11	2·47	887	3·50	1,630	2·25	757
12	2·60	985	3·55	1,665	2·40	855
13	2·67	1,020	3·70	1,775	2·70	1,055
14	2·90	1,195	4·10	2,065	2·90	1,195
15	3·00	1,265	4·40	2,285	3·05	1,302
16	3·05	1,302	4·10	2,065	3·30	1,480
17	2·75	1,090	3·60	1,700	3·30	1,480
18	2·55	952	3·50	1,630	3·00	1,265
19	2·55	952	3·25	1,445	2·70	1,055
20	2·67	1,020	3·25	1,445	2·45	887
21	2·57	952	3·35	1,517	2·15	692
22	2·47	887	3·45	1,592	2·00	600
23	2·40	855	3·70	1,775	1·80	480
24	2·32	790	3·85	1,880	1·92	540
25	2·27	757	3·50	1,630	2·20	725
26	2·25	757	3·05	1,302	2·10	660
27	2·25	757	2·75	1,090	2·12	660
28	2·20	725	2·55	952	2·02	600
29	2·15	692	2·35	822	2·15	692
30	2·27	757	2·35	822	2·30	790
31			2·60	985		

DAILY GAUGE HEIGHT AND DISCHARGE of Coldwater River near Merritt, for 1914.

Day.	July		August		September.		October.		November.		Decemb	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	[illegible]
	Feet	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	[illegible]
1	2·20	725	0·75	46	0·45	12	0·67	31	3·00	1,265	1·35	[illegible]
2	2·30	790	0·75	46	0·45	12	0·65	31	1·80	480	1·25	[illegible]
3	2·27	757	0·70	38	0·45	12	0·65	31	1·50	320	1·25	[illegible]
4	2·20	725	0·70	38	0·40	9	0·65	31	1·50	320	1·15	[illegible]
5	1·90	540	0·70	38	0·40	9	0·65	31	1·60	370	1·15	[illegible]
6	1·80	480	0·70	38	0·40	9	0·65	31	1·45	295	1·10	[illegible]
7	1·65	397	0·70	38	0·40	9	0·65	31	1·25	202		
8	1·62	370	0·70	38	0·40	9	0·60	25	1·20	180		
9	1·60	370	0·70	38	0·40	9	0·60	25	1·45	295		
10..	1·62	370	0·65	31	0·42	9	0·60	25	1·45	295		
11	1·60	370	0·65	31	0·45	12	0·60	25	1·35	247		
12	1·50	320	0·65	31	0·50	15	0·70	38	1·40	270		
13	1·45	295	0·60	25	0·50	15	0·70	38	1·30	225		
14	1·45	295	0·60	25	0·55	20	0·70	38	1·30	225		
15	1·40	270	0·60	25	0·60	25	0·70	38	1·30	225		
16	1·32	225	0·60	25	0·60	25	0·65	31	1·10	138		
17	1·30	225	0·55	20	0·65	31	0·65	31				
18	1·30	225	0·55	20	0·70	38	0·10	0				
19	1·20	180	0·55	20	0·70	38	0·15	0				
20	1·20	180	0·55	20	1·10	138	1·10	138				
21	1·10	138	0·50	15	1·00	102	0·15	0				
22	1·00	102	0·50	15	0·90	77	0·95	89				
23	1·00	102	0·50	15	0·85	66	0·85	66				
24	1·00	102	0·50	15	0·80	55	0·85	66				
25	1·00	102	0·50	15	0·80	55	0·85	66	1·40	270		
26	1·00	102	0·50	15	0·75	46	0·90	77	1·70	425		
27	0·90	77	0·47	12	0·70	38	0·85	66	1·60	370		
28	0·90	77	0·45	12	0·67	31	0·85	66	1·60	370		
29	0·80	55	0·45	12	0·70	38	0·80	55	1·40	270		
30	0·80	55	0·45	12	0·70	38	0·80	55	1·35	247		
31	0·80	55	0·45	12			1·00	102				

MONTHLY DISCHARGE of Coldwater River at Merritt, for 1914.

(Drainage area, 360 square miles.)

MONTH	DISCHARGE IN SECOND-FEET				RUN OF	
	Maximum.	Minimum.	Mean	Per square mile	Depth in inches on Drainage area	[illegible]
April	1,302	2	745·8	2·1	2·3	[illegible]
May	2,285	822	1,463·6	4·1	4·7	[illegible]
June	1,775	480	943·6	2·6	2·9	[illegible]
July	790	55	292·8	0·8	0·9	[illegible]
August	46	12	25·2	0·07	0·08	[illegible]
September	138	9	33·4	0·1	0·1	[illegible]
October	138	0	44·4	0·1	0·1	[illegible]
November	1,265	138	332·0	0·9	1·0	[illegible]
December	247	138	For period of 6 days			
The period..	2,285	0	485·1	1·34	12·08	[illegible]

NOTE. Winter conditions prevailed after December 6.

No records of precipitation are available for the drainage basin of the Coldwater river. The preci Nico's lake (similar climate to Merritt) is 10·06 inches (mean annual). It must be noted, however, that the river rises in the same hills from which the Coquihalla is fed, and the precipitation in the hills is many times t lower reaches of the Coldwater.

DEADMAN RIVER (2008).

Location.—Section 15, township 22, Range 22, west 6th meridian.

Records Available.—April 22 to November 21, 1913; April 1 to December 9, 1914.

Drainage Area.—300 square miles.

Gauge.—Standard staff gauge read daily by J. Hoey.

Channel.—Channel is straight and control is good. Velocity is high only at high water.

Discharge Measurements.—Curve is well defined with ten measurements at varying stages.

Winter Flow.—Ice conditions exist on this river during January, February, and March.

Accuracy.—Accuracy is considered very high, and results should fall within five per cent.

DISCHARGE MEASUREMENTS of Deadman River near Savona, for 1914.

Date	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height	Discharge.
			Feet	Sq. ft.	Ft. per sec	Feet.	Sec.-ft
May 24	C. B. Corbould	1,673	32·0	83·0	3·36	3·4	278·0[1]
July 10	"	1,915	24·0	29·8	1·45	1·6	43·5

[1] Measurements from bridge, high-water section.

See measurements, 1913, Water Resources Paper No. 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Deadman River above Criss Creek, for 1914.

Day	April.		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.
1	1·20	23·0	3·40	245·0	2·60	122·5
2	1·30	27·5	3·50	267·5	2·60	122·5
3	1·30	27·5	3·70	321·5	2·50	110·5
4	1·30	27·5	3·90	389·0	2·40	100·0
5	1·30	27·5	4·10	472·5	2·40	100·0
6	1·30	27·5	4·30	562·5	2·40	100·0
7	1·40	32·5	4·30	562·5	2·50	110·5
8	1·40	32·5	4·30	562·5	2·40	100·0
9	1·60	42·5	4·20	517·5	2·40	100·0
10	1·80	53·5	4·10	472·5	2·40	100·0
11	1·90	59·5	4·10	472·5	2·40	100·0
12	2·20	81·0	4·10	472·5	2·40	100·0
13	2·50	110·5	4·10	472·5	2·40	100·0
14	2·70	135·0	4·20	517·5	2·40	100·0
15	3·10	191·0	4·30	562·5	2·45	105·2
16	3·30	225·0	4·20	517·5	2·50	110·5
17	3·40	245·0	4·15	495·0	2·50	110·5
18	3·50	267·5	4·10	472·5	2·50	110·5
19	3·50	267·5	3·90	389·0	2·40	100·0
20	3·50	267·5	3·80	353·0	2·40	100·0
21	3·40	245·0	3·70	321·5	2·30	89·5
22	3·40	245·0	3·50	267·5	2·30	89·5
23	3·40	245·0	3·40	245·0	2·20	81·0
24	3·40	245·0	3·30	225·0	2·10	73·0
25	3·40	245·0	3·20	207·5	2·10	73·0
26	3·40	245·0	3·00	176·0	2·10	73·0
27	3·40	245·0	3·00	176·0	2·10	73·0
28	3·40	245·0	2·90	161·5	2·20	81·0
29	3·40	245·0	2·80	147·5	2·20	81·0
30	3·40	245·0	2·70	135·0	2·20	81·0
31			2·70	135·0		

Daily Gauge Height and Discharge of Deadman River above Criss Creek, for 1914.

Day.	July.		August		September		October.		November		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gage Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·20	81·0	2·00	66·0	1·50	37·5	0·95	11·0	0·90	9·0	0·90	9·0
2	2·10	73·0	1·90	59·5	1·50	37·5	0·90	9·0	0·90	9·0	0·90	9·0
3	2·00	66·0	1·80	53·5	1·50	37·5	0·90	9·0	0·90	9·0	0·90	9·0
4	2·00	66·0	1·60	42·5	1·45	35·0	0·90	9·0	1·00	13·0	0·90	9·0
5	1·90	59·5	1·60	42·5	1·45	35·0	0·90	9·0	1·00	13·0	0·90	9·0
6	1·90	59·5	1·80	53·5	1·40	32·5	0·90	9·0	1·00	13·0	0·90	9·0
7	1·80	53·5	1·80	53·5	1·40	32·5	0·90	9·0	1·00	13·0	0·90	9·0
8	1·70	48·0	1·90	59·5	1·40	32·5	0·90	9·0	1·00	13·0	0·90	9·0
9	1·70	48·0	2·00	[illegible]	1·30	27·5	0·90	9·0	1·00	13·0	0·90	9·0
10	1·60	42·5	2·00	66·0	1·30	27·5	0·90	9·0	1·00	13·0		.
11	1·60	42·5	2·00	66·0	1·30	27·5	0·90	9·0	1·00	13·0		..
12	1·50	37·5	2·00	66·0	1·30	27·5	0·90	9·0	1·00	13·0		
13	1·50	37·5	2·00	66·0	1·30	27·5	0·90	9·0	1·00	13·0		
14	1·50	37·5	1·90	59·5	1·30	27·5	0·90	9·0	1·00	13·0		..
15	1·70	48·0	1·90	59·5	1·30	27·5	0·90	9·0	1·00	13·0		.
[illegible]	1·70	48·0	1·90	59·5	1·25	25·2	0·90	9·0	1·00	13·0		.
17	1·70	48·0	1·80	53·5	1·25	25·2	0·90	9·0	1·00	13·0		
18	1·80	53·5	1·80	53·5	1·20	23·0	0·90	9·0	0·95	11·0		.
19	1·80	53·5	1·80	53·5	1·20	23·0	0·90	9·0	0·95	11·0		..
20	1·90	59·5	1·80	53·5	1·20	23·0	0·90	9·0	0·95	11·0		.
21	2·00	66·0	1·80	53·5	1·20	23·0	0·90	9·0	0·95	11·0		
22	2·00	66·0	1·80	53·5	1·20	23·0	0·90	9·0	0·90	9·0		
23	1·90	59·5	1·70	48·0	1·20	23·0	0·90	9·0	0·90	9·0		
24	1·80	53·5	1·70	48·0	1·10	18·0	0·90	9·0	0·90	9·0		.
25	1·80	53·5	1·70	48·0	1·10	18·0	0·90	9·0	0·90	9·0		
26	1·80	53·5	1·70	48·0	1·00	13·0	0·90	9·0	0·90	9·0		...
27	1·80	53·5	1·70	48·0	1·00	13·0	0·90	9·0	0·90	9·0		....
28	1·80	53·5	1·65	45·2	0·95	11·0	0·90	9·0	0·90	9·0		...
29	1·80	53·5	1·60	42·5	0·95	11·0	0·90	9·0	0·90	9·0		......
30	1·80	53·5	1·60	42·5	0·95	11·0	0·90	9·0	0·90	9·0		....
31	1·80	53·5	1·60	42·5		.	0·90	9·0	.			....

Monthly Discharge of Deadman River above Criss Creek, for 1914.

(Drainage area, 300 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.
April	267·5	23·0	154·0	0·51	0·57	9,164
May	562·5	135·0	364·0	1·20	1·40	22,381
June	122·5	73·0	96·6	0·32	0·36	5,748
July	81·0	37·5	54·3	0·18	0·21	3,339
August	66·0	42·5	54·0	0·18	0·21	3,320
September	37·5	11·0	25·0	0·08	0·09	1,488
October	11·0	9·0	9·1	0·03	0·03	559
November	13·0	9·0	11·1	0·04	0·05	660
December	9·0	9·0	(For period Dec. 1 to Dec. 9.)			
The period	562·5	9·0	96·0	0·32	2·92	46,659

Note.—Winter conditions prevailed after December 9.

FRASER RIVER AT LYTTON (2012).

Location.—Section 1, township 15, range 27, west 6th meridian.

Records Available. — February 20 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—Sixty-three thousand square miles.

Gauge.—Gauge painted on rock, and read daily by J. Clark.

Channel.—The channel varies in width from 200 feet at low water to 800 feet at high water. The flow is uniform, but velocities are very high during high water.

Discharge Measurements.—The curve is well defined, from 11,562 second feet to 162,000 second feet; above this the curve has been projected.

Winter Flow.—Open flow throughout the year.

Accuracy.—Conditions for gauge readings are good. Meterings are taken from ferry boat, but should be very accurate except at extreme high water. The results are considered to fall within 10 per cent of true accuracy.

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Lytton, for 1914.

Day	January		February		March		April		May		June	
	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.
1	10·0	13,000	11·0	16,500	11·0	16,500	10·0	13,000			28·3	119
2	10·5	14,750	10·5	14,750	11·0	16,500	10·0	13,000			27·9	117
3	11·5	18,500	10·0	13,000	11·0	16,500	10·0	13,000			27·7	116
4	12·0	20,500	9·5	11,250	11·0	16,500	10·5	14,750			28·65	121
5	12·5	23,000	9·0	9,500	10·5	14,750			10·5	14,750	29·9	129
6	12·0	20,500	9·0	9,500	10·5	14,750			11·0	16,500	31·0	136
7	12·0	20,500	9·5	11,250	10·5	14,750			11·0	16,500	32·0	142
8	12·0	20,500	11·0	16,500	10·0	13,000			10·5	14,750	32·1	143
9	12·0	20,500	11·5	18,500	11·0	16,500			10·0	13,000	31·4	138
10	11·0	16,500	11·5	18,500	10·0	13,000			11·0	16,500	31·5	139
11	10·5	14,750	12·0	20,500	10·0	13,000			12·0	20,500	31·7	14
12	11·5	18,500	12·0	20,500	10·0	13,000			12·5	23,000	31·5	139
13	11·5	18,500	13·0	25,500	10·0	13,000			13·0	25,500	31·6	140
14	11·0	16,500	13·0	25,500	10·5	14,750			13·5	28,500	31·8	141
15	10·0	13,000	14·0	31,500	11·5	18,500			15·0	37,500	32·6	146
16	10·0	13,000	14·0	31,500	11·0	16,500			16·5	47,000	34·5	157
17	9·5	11,250	14·5	28,500	11·0	16,500			19·0	62,500	36·1	167
18	10·0	13,000	13·0	25,500	12·0	20,500					37·7	177
19	10·0	13,000	12·0	20,500	12·0	20,500					39·2	18
20	10·0	13,000	12·0	20,500	12·5	23,000					39·8	18
21	9·5	11,250	12·0	20,500	13·0	25,500	.....	....	28·2	119,200	39·9	19
22	9·5	11,250	11·5	18,500	13·5	28,500			28·5	121,000	37·6	17
23	10·0	13,000	11·0	16,500	13·0	25,500			28·6	121,600	35·3	16
24	9·0	9,500	11·0	16,500	13·0	25,500			29·0	124,000	34·2	15
25	9·0	9,500	11·0	16,500	13·0	25,500			29·2	125,200	33·8	15
26	9·0	9,500	11·5	18,500	12·0	20,500			31·0	136,250	32·8	14
27	9·0	9,500	12·0	20,500	12·0	20,500			31·3	138,125	32·3	144
28	9·5	11,250	11·0	16,500	11·0	16,500			32·5	145,500	31·3	138
29	10·0	13,000			11·0	16,500	.....	.....	31·5	139,375	31·2	137
30	10·0	13,000	....	......	11·0	16,500	.....	.....	30·3	131,875	32·3	144
31	11·0	16,500	...	...	11·0	16,500	.....	....	29·6	127,600	.....	

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Lytton, for 1914.

Day	July		August		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec. ft.	Feet.	Sec. ft.	Feet.	Sec. ft.	Feet.	Sec. ft.	Feet.	Sec. ft.	Feet.	Sec. ft.
1	33·6	152,100	27·2	113,100	19·8	67,300	[illegible]	[illegible]	14·5	34,500	14·6	35,100
2	33·9	153,900	26·4	108,000	19·4	64,900	[illegible]	[illegible]	14·1	32,100	14·6	35,100
3	34·5	157,625	25·8	104,250	19·2	63,700	[illegible]	[illegible]	13·6	29,100	14·1	32,100
4	35·0	160,750	25·5	102,375	19·1	63,100	[illegible]	[illegible]	[illegible]	[illegible]	13·6	29,100
5	35·5	163,875	25·3	101,125	18·5	59,2[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	13·0	25,500
6	35·8	165,750	25·3	101,125	18·4	58,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	13·0	25,500
7	35·0	160,750	25·4	101,750	18·3	57,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12·9	25,100
8	34·8	159,500	25·2	100,500	18·3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12·5	23,000
9	33·5	151,500	25·1	99,875	18·1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12·0	20,500
10	32·8	147,300	24·6	96,750	18·1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12·0	20,500
11	32·4	144,900	24·2	94,250	18·[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11·7	19,200
12	32·3	144,300	24·2	94,250	18·5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11·1	16,900
13	32·5	145,500	24·1	93,625	18·[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11·2	17,300
14	32·6	146,100	23·6	90,500	18·[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11·0	16,500
15	32·8	147,300	23·1	87,375	18·[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10·9	16,150
16	32·6	146,100	23·0	86,750	18·1	[illegible]	[illegible]	[illegible]	[illegible]	25,[illegible]	10·8	15,800
17	32·6	146,100	22·6	84,250	18·0	56,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10·9	16,150
18	32·5	145,500	22·2	81,750	17·8	54,[illegible]	17·[illegible]	[illegible]	[illegible]	[illegible],000	10·7	15,450
19	32·2	143,700	21·7	78,700	17·5	53,000	17·[illegible]	[illegible]	[illegible]	[illegible]500	10·7	15,450
20	31·7	140,625	21·6	78,100	17·3	51,800	17·[illegible]	[illegible]	[illegible]	[illegible]900	10·6	15,100
21	31·1	136,875	21·6	78,100	16·9	49,400	17·[illegible]	[illegible]	14·8	[illegible]	10·9	16,150
22	30·5	133,125	21·6	78,100	16·8	48,800	17·[illegible]	[illegible]	14·4	33,900	11·1	16,900
23	30·1	130,625	21·6	78,100	16·5	47,000	17·2	51,200	14·5	34,500	11·4	18,100
24	31·2	137,500	21·5	77,500	16·5	47,000	17·0	50,000	14·2	32,700	12·1	21,000
25	33·2	149,700	21·4	76,900	16·9	49,400	16·3	47,000	14·0	31,500	12·3	22,000
26	34·1	155,125	21·3	76,300	17·2	51,200	15·8	42,700	13·8	30,300	12·8	24,500
27	31·4	138,750	21·2	75,700	17·8	54,800	15·2	38,800	13·6	29,100	12·8	24,500
28	29·8	128,800	20·5	71,500	18·1	56,650	14·7	35,700	13·8	30,300	13·1	26,100
29	29·4	126,400	20·3	70,300	18·0	56,000	14·5	34,500	14·4	33,900	13·2	26,700
30	29·0	124,000	20·0	68,500	17·7	54,200	14·1	32,100	14·3	33,300	13·0	25,500
31	28·3	119,800	19·6	66,100			14·3	33,300			12·9	25,100

For further meter measurements see Water Resources Papers Nos. 1 and 8

MONTHLY DISCHARGE of FRASER River at Lytton-above confluence with the Thompson river, for 1914.

(Drainage area, 63,000 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January	23,000	9,500	14,839	0·2	0·2	912,418
February	31,500	9,500	19,044	0·3	0·3	1,057,664
March	28,500	13,000	18,048	0·3	0·3	1,109,676
April	14,750	13,000	(for period April 1 to April 4.)			
May	145,500	14,750	73,592	1·2	1·4	4,525,004
June	190,400	116,125	148,018	2·3	2·6	8,808,062
July	165,750	119,800	145,286	2·3	2·6	8,933,446
August	113,000	66,100	87,593	1·4	1·6	5,385,873
September	67,300	47,000	56,191	0·9	1·0	3,343,569
October	55,400	32,100	43,845	0·7	0·8	2,695,945
November	36,300	23,000	30,100	0·5	0·6	1,791,100
December	35,100	15,100	21,998	0·3	0·3	1,352,578
The year	190,400	9,500	56,000	0·88 (estimated)	11·9	40,800,000 (estimated)

NOTE.—The gauge reader at this station, Chas. Lual, was drowned early in April, and it was nearly a month before a suitable gauge reader could be procured to take his place. Consequently, flow records for the greater part of April must remain blank.

The mean annual precipitation at Quesnel is given as 13·23 inches (Meteorological Service, Department of Marine and Fisheries). This is probably somewhat less than the mean annual precipitation over the whole drainage area of the Fraser.

HAT CREEK, ABOVE HAMMOND'S DIVERSION (2016).

Location.—Section 18, township 19, range 26, west 6th meridian: At Colley's ranch, just above the Hammond diversion.

Records Available.—April 22, 1911, to December 31, 1911; January 1, 1912, to November 18, 1912; April 30, 1913, to December 31, 1913; April 1, 1914, to November 30, 1914.

Drainage Area.—Four hundred and twenty square miles.

Gauge.—Standard vertical staff gauge, read daily by Thos. King,

Channel.—The channel is 12 to 14 feet in width and is straight above and below the gauge; the control is good.

Discharge Measurements.—Well-distributed meterings have been obtained covering the stream's range. Meterings were mostly made in the box flume above the Hammond diversion weir.

Winter Flow.—Stream is sometimes open during winter months. Snow fall is about 4 feet per annum, and rainfall probably 10 to 12 inches, bringing the total precipitation up to 14 to 16 inches, annually.

Accuracy.—Conditions for metering are good and gauge readings are carefully taken. Accuracy is probably within 10 per cent.

DISCHARGE MEASUREMENTS of Hat Creek above Hammond's Diversion, for 191

Date	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Dischar
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-f
July 8	C. B. Corbould	1,915	14·5	11·4	1·6	0·4	

For further hydrographic data, see Water Resources Papers Nos. 1 and 8.

Daily Gauge Height and Discharge of Hat Creek near Hammond's Div., for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·08	2·0	0·73	28·6	1·08	51·0
2	0·07	1·7	0·95	41·7	1·08	51·0
3	0·08	2·0	0·83	34·3	0·93	40·5
4	0·10	2·5	0·68	26·0	0·93	40·5
5	0·09	2·2	0·61	22·5	0·93	40·5
6	0·16	4·0	0·73	28·6	0·83	34·3
7	0·12	3·0	0·73	28·6	0·83	34·3
8	0·28	7·8	0·78	31·4	0·83	34·3
9	0·33	9·7	0·83	34·3	0·83	34·3
10	0·28	7·8	0·98	43·7	0·83	34·3
11	0·33	9·7	1·13	55·2	0·83	34·3
12	0·26	7·1	1·13	55·2	0·88	37·3
13	0·33	9·7	1·20	61·5	0·93	40·5
14	0·26	7·1	1·38	83·3	0·93	40·5
15	0·33	9·7	1·30	72·5	0·95	41·7
16	0·28	7·8	1·23	64·8	0·93	40·5
17	0·35	10·5	1·13	55·2	0·93	40·5
18	0·33	9·7	1·00	45·0	0·83	34·3
19	0·43	13·8	0·93	40·5	0·80	32·5
20	0·38	11·7	0·93	40·5	0·73	28·6
21	0·45	14·8	1·13	55·2	0·73	28·6
22	0·41	13·0	1·13	55·2	0·71	27·5
23	0·43	13·8	1·28	70·3	0·68	26·0
24	0·41	13·0	1·23	64·8	0·68	26·0
25	0·43	13·8	1·08	51·0	0·68	26·0
26	0·41	13·0	1·03	47·2	0·63	23·5
27	0·43	13·8	1·03	47·2	0·63	23·5
28	0·48	16·1	1·03	47·2	0·63	23·5
29	0·46	15·2	0·93	40·5	0·63	23·5
30	0·55	19·5	0·83	34·3	0·60	22·0
31			0·98	43·7		

DAILY GAUGE HEIGHT AND DISCHARGE of Hat Creek near Hammond's Div., for 1914.—*Con.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	0·58	21·0	0·21	5·3	0·10	2·5	0·13	3·3	0·13	3·3		
2	0·55	19·5	0·18	4·5	0·10	2·5	0·13	3·3	0·13	3·3		
3	0·53	18·5	0·18	4·5	0·09	2·2	0·13	3·3	0·13	3·3		
4	0·53	18·5	0·18	4·5	0·09	2·2	0·13	3·3	0·13	3·3		
5	0·52	18·0	0·18	4·5	0·08	2·0	0·13	3·3	0·13	3·3		
6	0·48	16·1	0·13	3·3	0·08	2·0	0·13	3·3	0·11	2·8		
7	0·48	16·1	0·13	3·3	0·08	2·0	0·13	3·3	0·11	2·8		
8	0·43	13·8	0·15	3·7	0·11	2·8	0·13	3·3	0·13	3·3		
9	0·43	13·8	0·13	3·3	0·12	3·0	0·13	3·3	0·11	2·8		
10	0·38	11·7	0·13	3·3	0·13	3·3	0·13	3·3	0·11	2·8		
11	0·38	11·7	0·13	3·3	0·13	3·3	0·15	3·7	0·11	2·8		
12	0·38	11·7	0·13	3·3	0·11	2·8	0·15	3·7	0·11	2·8		
13	0·38	11·7	0·13	3·3	0·13	3·3	0·15	3·7	0·11	2·8		
14	0·33	9·7	0·13	3·3	0·13	3·3	0·13	3·3	0·11	2·8		
15	0·33	9·7	0·13	3·3	0·13	3·3	0·13	3·3	0·11	2·8		
16	0·33	9·7	0·13	3·3	0·14	3·5	0·13	3·3	0·11	2·8		
17	0·33	9·7	0·13	3·3	0·13	3·3	0·14	3·5	0·11	2·8		
18	0·33	9·7	0·13	3·3	0·23	6·0	0·13	3·3	0·11	2·8		
19	0·33	9·7	0·13	3·3	0·23	6·0	0·14	3·5	0·11	2·8		
20	0·33	9·7	0·12	3·0	0·21	5·3	0·13	3·3	0·11	2·8		
21	0·33	9·7	0·12	3·0	0·13	3·3	0·13	3·3	0·11	2·8		
22	0·28	7·8	0·12	3·0	0·13	3·3	0·13	3·3	0·11	2·8		
23	0·25	6·8	0·12	3·0	0·13	3·3	0·13	3·3	0·13	3·3		
24	0·25	6·8	0·12	3·0	0·13	3·3	0·13	3·3	0·15	3·7		
25	0·25	6·8	0·12	3·0	0·13	3·3	0·13	3·3	0·15	3·7		
26	0·23	6·0	0·12	3·0	0·13	3·3	0·13	3·3	0·13	3·3		
27	0·23	6·0	0·12	3·0	0·13	3·3	0·13	3·3	0·13	3·3		
28	0·23	6·0	0·12	3·0	0·13	3·3	0·13	3·3	0·13	3·3		
29	0·23	6·0	0·10	2·5	0·11	2·8	0·13	3·3	0·13	3·3		
30	0·23	6·0	0·10	2·5	0·13	3·3	0·13	3·3	0·13	3·3		
31	0·21	5·3	0·10	2·5			0·13	3·3				

MONTHLY DISCHARGE of Hat Creek above Hammond's Diversion, for 1914.

(Drainage area, 47 square miles.)

Month.	Discharge in Second Feet.				Run-Off	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre feet
April	19·5	1·7	9·5	0·2	0·2	56
May	83·3	22·5	46·8	1·0	1·1	2,87
June	51·0	22·0	33·9	0·7	0·8	2,01
July	21·0	5·3	11·1	0·2	0·3	68
August	5·3	2·5	3·4	0·07	0·08	2
September	6·0	2·0	2·2	0·07	0·08	19
October	3·7	3·3	3·4	0·07	0·08	20
November	3·7	2·8	3·1	0·06	0·07	18
The period	83·3	1·7	14·3	0·30	2·71	6,9

NOTE.—Ice conditions prevailed early in December, when Hat creek was discharging practically no water.

No precipitation records are available for the Hat Creek drainage basin. The mean annual precipitat at Ashcroft is very low, about 5 inches per annum. The precipitation over the Upper Hat Creek valley is, however, c siderably in excess of this amount.

NAHATLATCH RIVER, UPPER (2028).

Location.—Section 14, township 12, range 27, west 6th meridian.

Records Available.—February 26 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—Three hundred square miles.

Gauge.—Standard chain gauge, read weekly by Chas. Nicholson.

Channel.—The channel is straight at measuring section. Velocities are fairly high.

Discharge Measurements.—Discharge measurements are made from cable car, and curve has been well defined at varying stages.

Winter Flow.—Open water conditions prevailed throughout the winter.

Accuracy.—The accuracy of results will eventually be high. The present results should fall well within 15 per cent.

DISCHARGE MEASUREMENTS of Nahatlatch (Upper) River near Keefers, B.C., for 1914.

Date	Hydrographer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
May 20	K. G. Chisholm	1,055	141	793	4·35	8·55	3,452
" 30	E. M. Dann and K. G. C.	1,075	116	627	3·60	6·70	2,255

For further hydrographic data see Water Resources Papers Nos. 1 and

DAILY GAUGE HEIGHT AND DISCHARGE of Nahatlatch River at Keefers, B.C., for 1914.

DAY.	January.		February.		March.		April		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft
1			3·84	549	3·67	489						
2												
3									8·46	4,066		
4	4·76	940										
5							4·79	955				
6												
7											7·30	2,8
8			3·74	514	3·52	437						
9												
10									7·41	2,920		
11	4·86	990										
12							6·59	2,131				
13												
14											8·50	4,11
15			3·54	444	4·42	784						
16												
17									8·56	4,176		
18	4·26	714										
19							6·19	1,797				
20												
21									8·50	4,110	8·20	3,7
22			3·44	409	5·27	1,208						
23												
24									9·90	5,760		
25	3·86	556										
26							5·59	1,394				
27												
28											8·40	4,0
29									6·80	2,320		
30					4·57	851			6·70	2,230		
31												

DAILY GAUGE HEIGHT AND DISCHARGE of Nahatlatch River at Keefers, B.C., for 1914.—*Concluded.*

DAY.	July.		August.		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.
1									8·15	3,725	....	
2			6·00	1,660						....	....	
3												
4	10·0	5,900					4·95	1,035				
5			......									
6					4·50	820					4·90	1,010
7												
8									6·10	1,730		
9			5·50	1,340								
10												
11	8·90	4,550					4·60	865				
12												
13					4·20	690					4·10	650
14												
15									5·30	1,225		
16			6·10	1,730								
17												
18							8·50	4,110				
19	8·30	3,800										
20					6·00	1,660					4·10	650
21												
22									5·00	1,160		
23			5·60	1,400								
24												
25							5·50	1,340				
26	6·50	2,050										
27					5·60	1,400					3·90	570
28												
29									6·00	1,660		
30			5·50	1,340								
31												

MONTHLY DISCHARGE of Nahatlatch River at Keefers, B.C., for 1914.

(Drainage area, 300 square miles.)

MONTH	DISCHARGE IN SECOND FEET				RUN-OFF	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet
ary	990	556	800	2·7	3·1	49,190
ruary	549	409	479	1·6	1·7	26,602
ch	1,208	437	753·8	2·5	2·9	46,349
il	2,131	955	1,569·2	5·2	5·8	93,373
	5,760	2,230	3,654·6	12·2	14·1	224,711
	4,110	2,810	3,675	12·2	13·6	218,680
	5,900	2,050	4,097	13·7	15·8	251,907
ust	1,730	1,340	1,494	5·0	5·8	91,864
tember	1,660	690	1,142	3·8	4·2	67,950
ober	4,110	865	1,837	6·1	7·0	112,954
ember	3,725	1,160	1,900	6·3	7·0	113,058
mber	1,010	570	720	2·4	2·8	44,271
ear	5,900	409	1,843	6·14	83·8	1,340,909

NOTE.—Precipitation above the upper station is probably about 70 to 80 inches in normal years. The fact that the "...in inches on drainage area" for 1914 is 83·8 seems to indicate either an unusually large rainfall or that the drainage ... (300 square miles) is somewhat too small.

NAHATLACH RIVER, LOWER (2027).

Location.—Section 7, township 12, range 26, west 6th meridian.

Records Available.—March 1 to December 7, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—Four hundred square miles.

Gauge.—Standard vertical staff gauge, read weekly by Chas. Nicholson.

Channel.—Channel at section is straight, with an average depth at low water of 8 feet. Velocity low. Bed of river rocky and permanent.

Discharge Measurements.—Discharge measurements are made from cable car.

Winter Flow.—Open conditions generally prevail throughout the winter.

Accuracy.—Accuracy of results will eventually be high, and the present returns are within 15 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE of Nahatlatch River at Keefers, B.C. for 1914.

D	January		February.		March.		April.		May.		June	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec
1			1·40	520	1·20	450						
2												
3												
4	2·60	1,140							6·30	4,520		
5												
6							2·60	1,140				
7											5·20	[illegible]
8			1·10	410	1·10	410						
9												
10									5·50	3,680		
11		962										
12												
13							4·30	2,500				
14											6·80	[illegible]
15			0·90	340	1·95	755						
16												
17												
18	1·70	645							6·00	4,205		
19												
20							4·10	2,320				
21											7·10	[illegible]
22			0·80	310	2·95	1,385						
23									7·50	5,800		
24												
25	1·60	600							8·20	6,570		
26												
27							3·35	1,680				
28											6·40	[illegible]
29					2·25	920						
30									4·70	2,880		
31												

DAILY GAUGE HEIGHT AND DISCHARGE of Nahatlatch River at Keefers, B.C., for 1914.—*Concluded.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1									6·00	4,205		
2			3·95	2,185								
3												
4	8·20	6,570					2·45	1,042				
5												
6					2·10	835					2·40	1,010
7												
8									3·90	2,140		
9			3·20	1,560								
10												
11	7·00	5,255					2·20	890				
12												
13					1·80	685					1·60	600
14												
15									3·00	1,420		
16			3·80	2,050								
17												
18							6·40	4,625				
19	6·10	4,310										
20					3·20	1,560					1·60	600
21												
22									2·60	1,140		
23			3·20	1,560								
24												
25							3·20	1,560				
26	4·30	2,500										
27					3·00	1,420					1·50	555
28												
29									3·80	2,050		
30			3·00	1,420								
31												

For meterings and further hydrographic data, see Water Resources Papers Nos. 1 and 8.

MONTHLY DISCHARGE of Nahatlatch (Lower) River at Keefers, B.C. for 1914.

(Drainage area, 400 square miles.)

Month	Discharge in Second-Feet				Run-Off	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet.
January	1,140	600	826	2·1	2·4	51,446
February	520	310	395	1·0	1·0	21,937
March	1,385	410	784	2·0	2·3	48,206
April	2,500	1,140	1,910	4·8	5·3	113,650
May	6,570	2,880	4,609	11·5	13·3	283,404
June	5,255	3,365	4,572	11·4	12·7	272,080
July	6,570	2,500	4,659	11·6	13·4	[illegible],409
August	2,185	1,420	1,755	4·4	5·1	107,910
September	1,560	685	1,125	2·8	3·1	66,940
October	4,625	890	2,020	5·0	5·8	124,758
November	4,205	1,140	2,191	5·5	6·1	130,369
December	1,010	555	691	1·7	2·0	42,488
The year	6,570	310	2,130	5·3	72·5	1,549,657

Note.—No precipitation records available—it is probable, however, that the rainfall is about the same as at the head of the Lillooet river—from 80 to 90 inches annually.

The high run-off in depth in inches on drainage area seems to indicate that the drainage area is slightly too small.

NICOLA RIVER AT MERRITT (2029).

Location.—At Merritt, Water District No. 3.

Records Available.—June 16 to December 31, 1911; January 31 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—One thousand five hundred square miles.

Gauge.—Standard vertical staff gauge, read tri-weekly by Miss C. A. Seaton.

Channel.—The bed of the stream is gravelly, and the flow is in two channels during high water.

Discharge Measurements.—Four well-distributed measurements have been obtained in 1914.

Winter Flow.—Open conditions usually prevail throughout the year.

Accuracy.—The accuracy is considered to be within 15 per cent of true conditions.

DISCHARGE MEASUREMENTS of Nicola River at Merritt, for 1914.

Date.		Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
May	3	K. G. Chisholm	1505	135	537	4·65	7·53	[illegible]
May	25	do	1055	135	649	4·51	7·80	[illegible]
July	8	do	1913	60	306	3·45	6·07	[illegible]
July	29	C. B. Corbould	1915	55	245	0·90	5·10	[illegible]

For further hydrographic data, see Water Resources Papers Nos 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at Merritt, for 1914.

DAY.	January		February		March.		April		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft
1		. . .	4·80	130	5·00	185						
2							5·15	235	6·40	1,065	7·40	2,320
3			4·80	130	5·00	185						
4							5·30	292	6·50	1,170	7·90	3,080
5	4·80	130	4·70	104	4·90	156	5·40	335				
6									6·90	1,640	7·20	2,080
7	5·70	490	4·60	82	4·90	156	5·50	390				
8									7·00	1,780	6·80	1,520
9	5·50	390	4·60	82	4·90	156	5·80	550				
10									7·50	2,470	6·80	1,520
11	5·20	253	4·60	82	4·80	130	6·10	775				
12							6·10	775	7·60	2,610	6·90	1,640
13	5·20	253	4·65	93	4·80	130						
14							6·30	955	8·[illegible]	3,790	6·90	1,640
15	5·00	185	4·65	93	5·00	185						
16							6·60	1,280	8·20	3,500	7·10	1,915
17	5·00	185	4·65	93	5·00	185						
18							6·50	1,170	7·60	2,610	7·10	1,915
19	5·00	185	4·65	93	5·10	218						
20							6·60	1,280	7·60	2,610	7·00	1,780
21	4·80	130	4·70	104	5·10	218						
22					5·10	218	6·70	1,395	7·77	2,760	6·70	1,395
23	4·60	82	4·70	104								
24					5·00	185	6·80	1,520	8·10	3,350	6·60	1,280
25	4·70	104	4·70	104								
26					5·00	185	6·60	1,280	7·60	2,610	6·60	1,280
27	4·80	130	4·80	130								
28					5·00	185	6·40	1,055	7·10	1,915	6·60	1,280
29	4·80	130			5·10	218						
30							6·30	955	7·10	1,915	6·50	1,170
31	4·80	130			5·10	218						

DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at Merritt, for 1914.

Day	July		August.		September		October	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec. ft	Feet	Sec. ft	Feet	Sec. ft	Feet	Sec. ft
1	6·40	1,055			4·30	34	4·40	[illegible]
2			5·00	185				
3	6·30	955			4·30	34	4·40	[illegible]
4			4·90	156				
5	6·20	880			4·30	34	4·40	[illegible]
6			4·80	130				
7	6·20	880			4·40	50	4·40	[illegible]
8			4·80	130				
9	5·90	620			4·50	64	4·30	[illegible]
10			4·80	130				
11	5·80	550			4·50	64	4·30	[illegible]
12			4·70	104				
13	5·70	490			4·60	82	[illegible]	[illegible]
14			4·70	104				
15	5·70	490			[illegible]	82	[illegible]	[illegible]
16			4·60	82				
17	5·50	380			4·60	82	4·50	64
18			4·60	82				
19	[illegible]	380			4·60	82	4·60	[illegible]
20			4·50	64				
21	[illegible]	[illegible]			4·70	104	4·75	[illegible]
22			4·50	64				
23	[illegible]	202			4·60	82	4·70	[illegible]
24			4·50	64				
25	5·30	202			4·60	82	4·70	[illegible]
26			4·50	64				
27	5·20	251			4·50	64	4·60	[illegible]
28			4·40	50				
29	[illegible]	218			4·50	64	[illegible]	[illegible]
30			4·40	50				
31	5·00	185					4·70	[illegible]

MONTHLY DISCHARGE of Nicola River at Merritt, for 1914.

(Drainage area, 1,500 square miles.)

Month.	Discharge in Second Feet				Run-Off	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	
January	490	82	198	0·13	0·15	[illegible]
February	[illegible]	82	102	0·07	0·07	[illegible]
March	218	130	183	0·12	0·14	
April	1,520	235	889	[illegible]	0·66	[illegible]
May	3,790	1,055	2,386	[illegible]	1·83	[illegible]
June	3,060	1,170	1,718	1·14	1·27	
July	1,055	185	516	[illegible]	[illegible]	[illegible]
August	185	50	97	[illegible]	[illegible]	[illegible]
September	104	34	67	[illegible]	0·04	[illegible]
October	117	34	69	0·05	0·06	[illegible]
The period	3,790	34	622·5	0·41	4·68	[illegible]

NOTE.—Precipitation on the Coldwater varies from 10 to 50 inches, while on the Nicola river proper it av about 10 inches, and this is subject to large evaporation losses.

The flow at this station includes the flow of Coldwater river.

NICOLA RIVER, AT MOUTH (2030).

Location.—Section 12, township 17, range 25, west 6th meridian.

Records Available.—August 1 to November 31, 1911; April 5 to December 21, 1912; May 9 to December 11, 1913; April 1 to September 30, 1914.

Drainage Area.—Two thousand six hundred and fifty square miles.

Gauge.—Inclined staff gauge, read three times a week by Miss Violet Curnow.

Channel.—Is straight at measuring section. Velocity high. Bed of stream is composed of rocks and gravel. During high water on the Thompson river the control is affected at the measuring section but not at the gauge.

Discharge Measurements.—Are made from bridge at all stages.

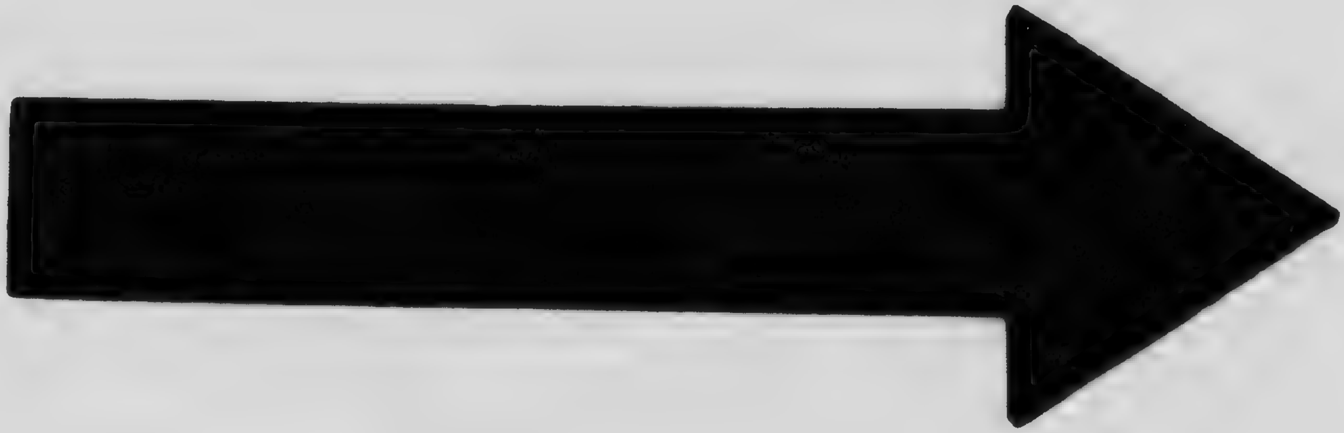
Winter Flow.—Ice conditions exist usually during January, February and March.

Accuracy.—The accuracy will eventually be high, but at present more measurements are required.

DISCHARGE MEASUREMENTS of Nicola River at mouth, for 1914.

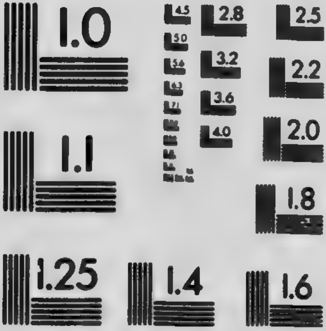
Date	Hydrographer	Meter No.	Width	Area of Section	Mean Velocity.	Gauge Height	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet	Sec. ft.
May [illegible]	K. G. Chisholm	1055	144	801	8·06	7·6	6,456
July [illegible]	C. B. Corbould	1915	115	197	2·40	2·42	466

For further hydrographic data, see Water Resources Papers Nos. 1 and 8.



MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



APPLIED IMAGE Inc
1653 East Main Street
Rochester, New York 14609 USA
(716) 482 - 0300 - Phone
(716) 288 - 5989 - Fax

DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at mouth, for 1914.

Day	April.		May.		June	
	Gauge Height	Dis-charge	Gauge Height.	Dis-charge	Gauge Height	Dis-charge
	Feet	Sec.-ft.	Feet.	Sec. ft	Feet.	Sec. ft
1						
2	2·90	575				
3					7·20	[illegible]
4			7·60	6,640		
5	3·30	775	7·60	6,640	6·50	[illegible]
6						
7			6·40	3,710		
8					5·80	2,955
9	4·80	1,870				
10			6·60	4,025	5·60	2,725
11						
12	5·10	2,165				
13			7·80	7,370		
14			7·90	7,740	6·40	[illegible]
15	6·30	3,570	7·15	5,205	6·86	[illegible]
16						
17						
18						
19	6·10	3,315				
20			7·80	7,370		
21						
22	5·80	2,955				
23						
24	5·60	2,725	7·60	6,640		
25	5·40	2,495			5·60	2,725
26						
27			7·20	5,345		
28					5·40	2,495
29	5·40	2,495	6·40	3,710		
30	5·60	2,725			5·20	[illegible]
31			6·30	3,570		

DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at mouth, for 1914—*Concluded.*

Day.	July.		August.		September.		October.		November.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge.
	Feet.	Sec. ft	Feet	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec. ft	Feet.	Sec.-ft.
1										
2	5·20	2,270								
3			2·30	335	1·50	115				
4										
5	4·80	1,870								
6					1·40	100				
7										
8	4·30	1,445								
9			2·10	270						
10										
11										
12					1·50	115				
13			2·00	240						
14										
15	4·00	1,220			1·80	180				
16										
17			1·80	180						
18										
19										
20			1·70	155	1·80	180				
21	3·40	830								
22									4·00	1,220
23										
24			1·60	135	1·70	155				
25	2·60	450							3·70	1,020
26										
27			1·50	115	1·90	210				
28	2·55	430					1·90	210	3·40	830
29										
30					2·00	240				
31			1·90	210			2·00	240		

MONTHLY DISCHARGE of Nicola River at Mouth, for 1914.

(Drainage area, 2,650 square miles.)

Month	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	3,570	575	2,333	0·9	1·0	138,820
May	7,740	3,570	5,664	2·1	2·4	348,264
June	5,345	2,270	3,385	1·3	1·4	201,420
July	2,270	430	1,216	0·46	0·5	74,766
August	335	115	205	0·08	0·09	12,605
September	240	100	162	0·06	0·07	9,640
October	240	210				...
November	1,220	830				..

NOTE.—Gauge readings during October and November were not numerous enough to give accurate run-off data.

Precipitation varies from a minimum of 5 to 10 inches at Spences Bridge to 50 inches in the upper reaches of several tributaries of the Nicola river.

The maximum recorded flow was 7,740 second-feet in May, and the minimum 100 second-feet in September.

The autumn rains on the Coldwater-Coquihalla summit probably account for the increased November flow.

SPIUS CREEK (2037).

Location.—Section 23, township 13, range 23, west 6th meridian.

Records Available.—August 18 to November 22, 1911; May 8 to September 12, 1912; May 25 to November 30, 1913; March 22 to December 24, 1914.

Drainage Area.—Three hundred and forty-four (344) square miles.

Gauge.—Standard chain gauge, read daily by G. A. Longbotham.

Channel.—The channel is composed of rocks and boulders; velocity of water is high at all stages.

Discharge Measurements.—Six discharge measurements were obtained during 1914 at varying stages, and curve is fairly well defined.

Winter Flow.—Ice conditions exist from November to February under normal conditions.

Accuracy.—Accuracy of results is considered high, except at freshet, when they should fall within 15 per cent.

DISCHARGE MEASUREMENTS OF Spius Creek near Canford, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 18	K. G. Chisholm	1505	70	111	1·73	1·48	191
May 5	do	1505	91	234	5·51	3·04	[illegible]
May 6	do	1505	90	224	5·16	2·92	1,171
May 27	do	1055	108	240	5·11	3·00	[illegible]
July 19	do	1913	76	138	3·60	2·08	[illegible]
July 10	C. B. Corbould	1915	68	67·1	1·85	1·25	[illegible]

For further hydrographic data on Spius creek, see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE of Spius Creek, near Canford, for 1914.

Day	March.		April.		May.		June	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height.	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1·45	180	2·75	1,031	4·10	2,415
2			1·50	198	3·35	1,627	4·35	2,677
3			1·50	198	3·95	2,257	4·65	2,362
4			1·55	218	2·80	1,077	2·80	1,077
5			1·80	335	2·95	1,221	2·75	1,031
6			2·15	545	2·90	1,173	2·50	810
7			2·30	650	2·90	1,173	2·65	939
8			2·40	728	3·15	1,420	2·60	894
9			2·50	810	3·20	1,470	2·60	894
10			2·65	959	3·25	1,522	2·65	939
11			2·90	1,173	3·30	1,575	2·70	984
12			2·75	1,031	3·90	2,265	2·95	1,221
13			3·00	1,270	3·80	2,100	3·10	1,370
14			3·05	1,320	4·60	2,940	2·95	1,221
15			3·05	1,330	4·55	2,887	3·80	2,100
16			3·10	1,370	4·35	2,677	4·10	2,415
17			3·00	1,270	4·00	2,310	3·70	1,995
18			2·90	1,173	3·75	2,047	3·30	1,575
19			2·80	1,077	3·70	1,995	2·70	984
20			2·65	959	3·90	2,205	2·50	810
21			2·60	894	4·00	2,310	2·30	650
22	1·70	285	2·55	852	4·20	2,520	2·35	689
23	1·65	261	2·55	852	4·25	2,572	2·25	614
24	1·60	228	2·60	894	4·00	2,310	2·25	614
25	1·50	198	2·65	959	3·25	1,522	2·20	650
26	1·45	180	2·60	894	3·10	1,370	2·40	728
27	1·40	162	2·50	810	3·05	1,320	2·50	810
28	1·45	180	2·35	769	3·10	1,370	2·55	852
29	1·45	180	2·45	769	2·70	984	2·85	1,125
30	1·45	180	2·45	769	2·95	1,221	2·80	1,077
31	1·40	162			[illegible]·80	2,160		......

DAILY GAUGE HEIGHT AND DISCHARGE of Spius Creek near Canford, for 1911.

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·85	1,125		112	0·90	52	1·15	96	2·40	728	2·00	[illegible]
2	2·80	1,077	1·20	107	0·90	52	1·15	96	2·40	728	2·00	[illegible]
3	2·80	1,077	1·20	107	0·90	52	1·15	96	2·40	728	2·00	[illegible]
4	2·50	810	1·15	96	0·90	52	1·10	86	2·45	769	1·95	[illegible]
5	2·40	728	1·15	96	0·90	52	1·10	86	2·40	728	1·85	[illegible]
6	2·35	689	1·10	86	0·90	52	1·05	76	2·30	650	1·75	310
7	2·25	614	1·10	86	0·90	52	1·05	76	2·15	545	1·65	[illegible]
8	2·20	578	1·05	76	1·00	67	1·05	76	1·90	390	1·60	[illegible]
9	2·20	578	1·05	76	1·05	76	1·10	86	1·90	390	1·50	[illegible]
10	2·25	614	1·05	76	1·10	86	1·10	86	1·85	362	1·45	[illegible]
11	2·20	578	1·05	76	1·15	96	1·10	86	1·85	362	1·40	[illegible]
12	1·95	420	1·05	76	1·25	120	1·10	86	1·90	390	1·40	[illegible]
13	1·90	390	1·05	76	1·40	162	1·15	96	1·85	362	1·40	[illegible]
14	1·85	362	1·05	76	1·55	218	1·20	107	1·85	362	1·40	[illegible]
15	1·85	362	1·05	76	1·60	238	1·25	120	1·80	335	1·35	[illegible]
16	1·80	335	1·05	76	1·65	261	1·30	133	1·80	335	1·40	[illegible]
17	1·80	335	1·05	76	1·75	310	1·35	147	1·75	310	1·45	[illegible]
18	1·70	285	1·00	67	1·55	218	1·40	162	1·70	285	1·50	[illegible]
19	1·65	261	1·00	67	1·50	198	1·40	162	1·70	285	1·50	[illegible]
20	1·50	198	1·00	67	1·35	147	1·50	198	1·65	261	1·65	[illegible]
21	1·45	180	1·00	67	1·20	107	1·55	218	1·60	238	1·95	[illegible]
22	1·40	162	1·00	67	1·20	107	1·65	261	1·60	238	2·25	[illegible]
23	1·40	162	1·00	67	1·15	96	1·65	261	1·70	285	2·00	[illegible]
24	1·40	162	1·00	67	1·15	96	1·65	261	1·70	285	2·00	[illegible]
25	1·40	162	1·00	67	1·15	96	1·60	238	2·30	650		
26	1·35	147	1·00	67	1·15	96	1·60	238	2·40	728		
27	1·35	147	0·95	59	1·10	86	1·60	238	2·15	545		
28		138	0·95	59	1·15	96	1·60	238	2·10	512		
29		129	0·95	59	1·15	96	1·60	238	2·10	512		
30	1·25	120	0·90	52	1·15	96	1·85	362	2·05	481		
31		116	0·90	52			2·00	450				

MONTHLY DISCHARGE of Spius Creek near Canford, B.C., for 1914.

(Drainage area, 344 square miles.)

Month.	Discharge in Second-Feet.				Run-Off	
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area	Tot in acre
April	1,370	180	839·5	2·4	2·7	[illegible]
May	2,940	984	1,823·0	5·3	6·1	[illegible]
June	2,677	614	1,217·4	3·5	3·9	[illegible]
July	1,125	116	420·7	1·2	1·4	[illegible]
August	112	52	75·3	0·2	0·2	[illegible]
September	310	52	117·8	0·3	0·3	[illegible]
October	450	76	166·0	0·5	0·6	[illegible]
November	769	238	459·3	1·3	1·4	[illegible]
December	614	147	293·6	0·8	0·9	[illegible]
The period	2,940	52	601·4	1·7	17·5	[illegible]

NOTE.—Mean annual precipitation at the mouth of Spius creek is about 10 inches, while in the higher altitudes
ably about 30 inches.

Winter conditions existed subsequent to December 24.

THOMPSON RIVER AT SPENCE'S BRIDGE (2039).

Location.—Section 10, township 17, range 25, west of 6th meridian.

Records available.—October 25 to December 31, 1911; January 1 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage area.—Twenty-one thousand square miles.

Gauge.—Gauge is standard chain gauge, situated on traffic bridge, read daily by Miss Violet Curnow.

Channel.—The channel varies in width from 400 feet to 500 feet. Depth of section at high water greater by 16 feet than at low.

Velocities range from 2.0 second-feet to 11 feet per second.

Discharge measurements.—Measurements are made from traffic bridge. Owing to great velocity at high water, meterings are difficult to obtain. However, curve is well defined.

Winter flow.—River usually remains open throughout the year.

Accuracy.—Results are considered to be very accurate, and all returns should fall within 5 per cent of the truth.

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Spence's Bridge for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·90	5,870	1·70	5,640	1·90	5,870	1·75	5,695	7·8	26,880	13·5	61,170
2	2·00	6,000	1·70	5,640	1·80	5,750	1·70	5,640	8·1	28,300	13·5	61,170
3	2·10	6,140	1·70	5,640	1·85	5,810	1·75	5,695	9·2	33,840	13·5	61,170
4	2·20	6,290	1·60	5,530	1·80	5,750	1·80	5,750	9·6	35,920	13·5	61,170
5	2·20	6,290	1·50	5,425	1·80	5,750	1·90	5,870	10·0	38,000	14·1	66,080
6	2·30	6,450	1·50	5,425	1·75	5,695	2·00	6,000	10·0	38,000	14·6	70,240
7	2·40	6,620	1·50	5,425	1·70	5,640	2·30	6,450	10·3	39,660	15·3	76,240
8	2·50	6,800	1·45	5,375	1·65	5,585	2·50	6,800	10·6	41,340	15·0	73,600
9	2·60	7,000	1·50	5,425	1·60	5,530	2·70	7,240	10·7	41,900	14·8	71,910
10	2·60	7,000	1·60	5,530	1·65	5,585	3·00	8,000	10·8	42,460	14·5	69,405
11	2·50	6,800	1·70	5,640	1·70	5,640	3·30	8,830	11·0	43,600	14·5	69,405
12	2·40	6,620	1·70	5,640	1·70	5,640	3·60	9,675	11·4	46,100	14·6	70,240
13	2·40	6,620	1·75	5,695	1·75	5,695	4·00	10,850	11·9	49,330	14·7	71,075
14	2·30	6,450	1·80	5,750	1·80	5,750	4·40	12,200	12·4	52,795	14·9	72,750
15	2·30	6,450	1·80	5,750	1·80	5,750	4·90	14,020	12·8	55,750	15·0	73,600
16	2·30	6,450	1·80	5,750	1·75	5,695	5·30	15,660	13·6	57,250	15·0	73,600
17	2·30	6,450	1·75	5,695	1·75	5,695	5·70	17,340	13·2	58,770	15·9	81,520
18	2·20	6,290	1·70	5,640	1·80	5,750	5·80	17,760	13·4	60,370	16·3	85,040
19	2·20	6,290	1·70	5,640	1·80	5,750	5·90	18,180	14·8	71,910	16·7	88,560
20	2·10	6,140	1·75	5,695	1·80	5,750	6·40	20,440	14·3	67,740	16·75	89,000
21	2·10	6,140	1·70	5,640	1·85	5,810	6·50	20,900	14·3	67,740	16·55	87,240
22	2·10	6,140	1·70	5,640	1·85	5,810	6·60	21,360	14·1	66,080	16·3	85,040
23	2·00	6,000	1·75	5,695	1·90	5,870	6·70	21,820	14·2	66,910	15·9	81,520
24	2·00	6,000	1·70	5,640	1·90	5,870	6·80	22,280	14·3	67,740	15·7	79,760
25	1·90	5,870	1·70	5,640	1·85	5,810	6·90	22,740	14·5	69,405	15·5	78,000
26	1·80	5,750	1·75	5,695	1·80	5,750	6·90	22,740	14·8	71,910	15·0	73,600
27	1·80	5,750	1·80	5,750	1·80	5,750	7·15	23,890	14·8	71,910	14·6	70,240
28	1·60	5,530	1·90	5,870	1·90	5,870	7·15	23,890	14·7	71,075	14·75	71,490
29	1·45	5,375			1·85	5,810	7·30	24,580	14·6	70,240	14·75	71,490
30	1·40	5,330			1·85	5,810	7·50	25,500	14·2	66,910	14·8	71,910
31	1·60	5,530			1·80	5,750			13·8	64,595	..	...

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Spence's Bridge, for 1914.

Day.	July		August		September.		October.		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	14·8	71,910	11·0	43,600	7·30	24,580	6·60	21,360	5·70	17,340	4·80	13,650
2	15·0	73,600	10·7	41,900	7·00	23,200	6·80	22,280	5·80	17,760	4·80	13,650
3	15·1	74,480	10·65	41,620	6·80	22,280	7·00	23,200	5·80	17,760	4·80	13,650
4	15·2	75,360	10·7	41,900	6·60	21,360	7·30	24,580	6·00	18,600	4·70	13,280
5	15·4	77,120	10·5	40,780	6·50	20,900	7·40	24,580	6·20	19,520	4·65	13,095
6	15·6	78,880	10·6	41,340	6·50	20,900	6·80	22,280	6·40	20,440	4·50	12,550
7	15·4	77,120	10·4	40,220	6·20	19,520	6·50	20,900	6·70	21,820	4·40	12,200
8	15·2	75,360	10·3	39,660	6·20	19,520	6·30	19,980	6·50	20,900	4·30	11,860
9	15·0	73,600	10·2	39,100	6·20	19,520	5·90	18,180	6·30	19,980	4·30	11,860
10	14·35	68,155	10·1	38,540	6·20	19,520	5·80	17,760	6·10	19,060	4·20	11,520
11	14·3	67,740	9·7	36,440	6·20	19,520	5·80	17,760	6·00	18,600	3·70	9,975
12	14·3	67,740	9·4	34,880	6·20	19,520	5·90	18,180	6·00	18,600	3·40	9,110
13	14·3	67,740	9·3	34,360	6·20	19,520	5·70	17,340	6·10	19,060	3·40	9,110
14	14·35	68,155	8·90	32,300	6·20	19,520	5·60	16,920	6·00	18,600	3·20	8,550
15	14·4	68,570	8·60	30,800	6·10	19,060	5·50	16,500	6·00	18,600	3·10	8,270
16	14·6	70,240	8·60	30,800	6·00	18,600	5·40	16,080	5·80	17,760	3·00	8,000
17	14·5	69,405	8·60	30,800	5·80	17,760	5·30	15,660	5·60	16,920	2·90	7,740
18	14·4	68,570	8·40	29,800	5·50	16,500	5·30	15,660	5·50	16,500	2·80	7,490
19	14·0	65,250	8·40	29,800	5·40	16,080	5·40	16,080	5·40	16,080	2·80	7,490
20	13·7	62,770	8·30	29,300	5·20	15,240	5·80	17,760	5·30	15,660	2·80	7,490
21	13·3	59,570	8·20	28,800	5·40	16,080	6·00	18,600	5·20	15,240	2·80	7,490
22	13·3	59,570	8·20	28,800	5·80	17,760	6·20	19,520	5·10	14,820	2·90	7,740
23	12·9	56,500	8·10	28,300	5·80	17,760	6·50	20,900	5·10	14,820	2·90	7,740
24	12·6	54,250	8·10	28,300	6·00	18,600	6·30	19,980	5·10	14,820	3·00	8,000
25	12·1	50,680	8·10	28,300	5·90	18,180	6·00	18,600	5·10	14,820	3·00	8,000
26	11·9	49,330	7·80	26,880	6·00	18,600	5·80	17,760	5·00	14,400	3·10	8,270
27	11·9	49,330	7·80	26,880	6·00	18,600	5·65	17,130	5·00	14,400	3·10	8,270
28	11·8	48,670	7·70	26,420	6·00	18,600	5·70	17,340	4·90	14,020	3·10	8,270
29	11·7	48,020	7·60	25,950	6·20	19,520	5·60	16,920	4·9	14,020	3·20	8,550
30	11·6	47,380	7·50	25,500	6·30	19,980	5·55	16,710	4·8	13,650	3·20	8,550
31	11·3	45,460	7·40	25,040			5·60	16,920			3·20	8,550

MONTHLY DISCHARGE of Thompson River at Spence's Bridge for 1914.

(Drainage area, 21,000 square miles.)

Month	Discharge in Second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet
January	7,000	5,300	6,278	0·3	0·3	381,7
February	5,870	5,375	5,625	0·3	0·3	312
March	5,870	5,530	5,742	0·3	0·3	353
April	25,500	5,640	14,593	0·7	0·8	868
May	71,910	26,880	54,304	2·6	3·0	3,339,04
June	89,000	61,170	73,908	3·5	3·9	4,397
July	78,880	45,460	64,210	3·0	3·4	3,948
August	43,600	25,040	33,133	1·6	1·8	2,037
September	24,580	15,240	19,210	0·9	1·0	1,143
October	24,580	15,660	18,822	0·9	1·0	1,157
November	21,820	13,650	17,152	0·8	0·9	1,02
December	13,650	7,490	9,675	0·4	0·5	594
The year	89,000	5,330	26,881	1·28	17·2	19,553

NOTE.—Precipitation varies from 5 inches at the confluence of the Thompson and Fraser rivers to 40 inches at t Albreda summit and 40 inches at the source of several streams tributary to Shuswap lake.

For meterings and further hydrographic data, see Water Resources Papers Nos. 1 and 8.

MISCELLANEOUS METERING STATIONS.

Date	Stream.	Tributary to—	Locality.	Gauge Height	Discharge
				Feet	Sec.-ft.
May 8	Alkali creek	Cherry creek	Above Cornwall's div	–	2·5
June 11	"	"	Cornwall's ranch	–	1·2
" 12	"	"	Below beaver dam div.	–	2·2
Sept 4	Bear creek	Clearwater river	Crossing Myrtle trail	–	7·4
June 11	"	"	" "	–	162·0
" 10	Beaver creek	"	" "	–	190·4
Sept 6	Boulder creek	N. Thompson river	1 mile from mouth	1·0	19·2
Aug 12	Cahilty creek	Louis creek	1 mile from mouth	0·95	6·8
June 11	Candle creek	Clearwater river	Larkey's ranch	–	49·7
Aug 29	"	"	"	–	0·3
June 15	Chartrand creek	Guichon creek	At bridge	1·25	4·6
" 16	Chartrand spring	Chartrand creek	Chartrand ranch	–	0·5
April 27	Cherry creek	Kamloops lake	Cornwall's ranch	–	9·6
May 8	"	"	"	–	23·8
" 11	"	"	"	–	86·1
June 11	"	"	"	–	8·3
" 17	Dupuis creek	Mamit lake	Above Mamit lake	–	2·2
" 3	Edwards creek	Heffley creek	1 mile above Heffley creek		6·7
Aug 25	Fishtrap creek	N. Thompson river	1 mile from mouth	0·5	11·4
May 27	Gordon creek	North Thompson river	At highway bridge		1·8
June 17	Greenstone creek	Meadow creek	Above Homfray dam		10·5
" 15	Guichon creek	(Chartrand div. of)	At road		2·9
" 13	"	Mamit lake	F. Allen's ranch		25·8
" 15	"	"	Chartrand ranch		54·6
" 3	Heffley creek	(Anderson diversion of)	At intake		3·4
" 10	Hemp creek	Clearwater	Crossing Clearwater trail		284·0
" 16	Meadow creek	Guichon creek	Above Indian Reserve ditch		66·7
Sept 1	Myrtle river	Clearwater river	At lower crossing	1·1	852·0
May 27	Noble creek	N. Thompson river	Above B. C. F. div		6·8
Aug. 7	Paul creek	"	At outlet of lake	4·45	23·0
May 8	Pendleton creek	Cherry creek	Above Cornwall's intake		1·3
June 12	"	"	" "		0·6
Aug. 17	Queest creek	Shuswap lake	½ mile from mouth		9·2
June 16	Quenville creek	Guichon creek	Above Quenville div		2·9
Aug 12	Scotch creek	Shuswap lake	3 miles from mouth		93·5
" 15	Seymour river	"	1 mile from mouth	2·37	1,051·0
June 13	Three-mile creek	Kamloops lake	Harris ranch		6·7
Aug 21	N. Thompson river	Thompson river	C.N.R. bridge near Kamloops		17,775·0
" 25	Whitewood creek	N. Thompson river	At highway bridge		1·7
June 15	Witch creek	Guichon creek	½ mile from mouth		28·1

MISCELLANEOUS METERING STATIONS.

Date	Stream.	Tributary to –	Locality.	Gauge Height	Discharge.
				Feet.	Sec.-ft.
Aug 13	Hat creek (Hammond's diversion)				7·6
June 16	Six-mile creek	Tulameen river	Above diversions	3·77	1·0
Nov. 15, 1913	Twenty-mile creek	Similkameen river	Above intake Nickel Plate mine.	0·70	13·2
June 12	"	"	" "	2·60	236·0
1914					
June 23	"	"	" "	2·00	140·0
July 2	" "	" "	" "	0·89	30·2
Aug 31	"	"	" "	0·59	12·0

REPORT

OF THE

BRITISH COLUMBIA HYDROGRAPHIC SURVEY FOR 1914

CHAPTER 7

Nelson Division—Hydrographic Data

CHAPTER VII.

Nelson Division.—Hydrographic Data.

REGULAR METERING STATION.

CARIBOO CREEK, NEAR BURTON CITY (3057).

Location. Upstream side of highway bridge, one-quarter mile from mouth, and one-quarter mile from Burton City wharf, between Upper and Lower Arrow lakes, Nelson district.

Records Available.—August to December, 1914.

Climatic Conditions.—Summers, hot with considerable rain in May and June, and very little rain in July and August. Winters mild, seldom below 0°F. with light snowfall. High water occurs generally in April or May. Extreme floods occur after heavy snowfall, during preceding winter, and continuous hot days and nights or warm rains in the latter part of April or the beginning of May. Low water may occur in August or September or during the winter. The stream does not stay frozen for long periods in the winter. Frazil ice is seldom present.

Gauge.—Located at highway bridge, near Burton. It is affected by backwater from Columbia river during May, June, July, and part of August. Mr. Ralph Islip reads the gauge daily

Channel.—The channel above and below the gauge is wide and filled with small log jams. It is very liable to shift during high water.

Discharge Measurements.—The curve is based on two discharge measurements made in September and October. A measurement was made early in August, but the gauge height was affected by backwater.

Accuracy.—The results published herein are probably within 20 per cent of the true discharge.

General.—Cariboo creek and its many tributaries rise in the divide between the Arrow lakes and Slocan lake watersheds, between Barton City and New Denver. The drainage area, in all, is about 225 square miles. The freshet is caused by the melting of snow, and not from glaciers.

Cariboo creek deposits large quantities of silt in Columbia river narrows, and is a detriment to navigation. The maximum flow has been estimated at 8,000 c.f.s., but this discharge will only occur once in a long time.

DISCHARGE MEASUREMENTS of Cariboo Creek near Burton City, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft per sec	Feet.	Sec.-ft.
Ju 24	C. E. R.	1,672	46	177	2.05	4.40	262[1]
Se [illegible]	C. E. R. & J. A. E.	1,927	47	144	0.94	1.28	136
Oc 30	J. A. E.	1,909	63	172	1.75	1.75	303

[1] Affected by backwater.

Daily Gauge Heights and Discharges of Cariboo Creek near Barton City, B.C., for 1914.

Day.	August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		300	1·0	77	1·28	129	1·73	293	1·85	348
2	...	293	1·0	77	1·[illegible]	129	1·75	302	1·82	334
3		286	1·28	129	1·26	124	1·75	302	1·85	348
4		279	1·28	129	1·25	122	1·76	306	1·85	348
5		272	1·25	122	1·25	122	1·76	306	1·85	348
6		[illegible]	1·24	120	1·2	110	1·75	302	1·9	372
7	1·65	258	1·25	122	1·2	110	1·75	302	1·9	372
8	..	251	1·25	122	1·2	110	1·78	315	1·92	382
9	......	244	1·25	122	1·2	110	1·78	315	1·92	382
10	......	230	1·28	129	1·2	110	1·78	315	1·92	382
11					....	..	....	....	...	
12	.....	223	1·25	122	1·22	115	1·78	315	1·92	382
13	1·5[illegible]	216	1·25	122	1·22	115	1·8	324	1·95	396
14	1·5	196	1·2	110	1·2	110	1·8	324	1·95	396
15	1·5	196	1·2[illegible]	122	1·2	110	1·8	324	1·96	401
16	1·4	164	1·3	134	1·15	103	1·8	324	1·96	401
17	1·4	164	1·28	129	1·15	103	1·8	324	1·96	401
18	1·45	180	1·28	129	1·15	103	1·8	324	1·95	396
19	1·4	164	1·25	122	1·2	110	1·8	324	1·95	396
20	1·4	164	1·25	122	1·25	122	1·8	324	1·95	396
21	1·45	180	1·2	110	1·4	164	1·82	334	1·97	406
22	1·45	180	1·2	110	1·45	180	1·82	334	1·97	406
23	1·45	180	1·25	122	1·50	196	1·85	348	1·97	406
24	1·4	164	1·25	122	1·6	236	1·85	348	1·97	406
25	1·4	164	1·2	110	1·69	276	1·85	348	1·96	401
26	1·4	164	1·2	110	1·69	276	1·85	348	1·96	401
27	1·4	164	1·25	122	1·68	271	1·8	324	1·95	396
28	1·4	164	1·28	129	1·68	271	1·8	324	1·95	396
29	1·3	134	1·27	127	1·7	280	1·82	334	1·95	396
30	1·2	110	1·25	122	1·75	302	1·82	334	1·96	401
31	1·2	110	....	..	1·73	[illegible]		.	1·96	401

Monthly Discharge of Cariboo Creek near Burton City, B.C., for 1914.

(Drainage area, 225 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
August	.....	110	203	0·90	1·04	12,500	
September	134	77	116	0·51	0·57	6,900	D
October	302	103	162	0·72	0·83	9,961	D
November	348	293	322	1·43	1·59	19,200	D
December	406	334	386	1·71	[illegible]	23,700	D

Carpenter Creek near New Denver (3024).

Location.—About 3 miles from the mouth, opposite the Denver Light and Power Company's power-house, Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Summers, hot. May and June are generally wet, but there is very little rain in July and August. Winters not severe, seldom below zero. Snowfall is not heavy in the lower altitudes.

Gauge.—Vertical staff enamel gauge was originally established immediately above the dam, but in December it was moved below the dam and opposite the power-house. Mr. C. J. Campbell reads the gauge three times a week.

Channel.—The channel generally below the dam and canyon is rocky and filled with huge boulders, but at the new gauge should be fairly permanent, though the water will be very broken during freshet.

Discharge Measurements.—No desirable metering station has as yet been established. Five measurements were made in 1914 from the highway bridge near New Denver. At this section and for a mile above the creek is flowing through a shifting gravel bed, and it is doubtful if the total discharge at the gauge is recorded when measurements are made from the bridge.

Accuracy.—The results published are not guaranteed.

General.—Carpenter creek is a flashy mountain stream, flowing from the east into Slocan lake, near New Denver. The drainage area is about 65 square miles of very mountainous country, abundant in mineral wealth. Glaciers feed the various forks. Heavy freshets are liable to occur in May, June, or July.

The water is used for mining and power purposes. The only plant operating at present on Carpenter creek is the Denver Light and Power Company, Ltd., Mr. C. J. Campbell, manager. The plant is located at the canyon about 3 miles above New Denver. The head is about 100 feet and a 93.75-k.v.a. C.G.E. generator is installed. At present, in the neighbourhood of 100 h.p. is developed.

DISCHARGE MEASUREMENTS of Carpenter Creek at New Denver, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
April 16	C. E. W., D. O. B. G.	1,048	199	96·6	5·60	1·9	541·0
May 13	J. A. E., G. K. B	1,672	200	130	7·28	2·35	919·0
July 9	D. O. R. G., J. A. E.	1,929	199	132	5·19	2·10	684·0
Aug 18	D. O. B. Gill	1,929	33	47	3·83	1·10	180·0
Nov 4	J. A. E., G. K. B	1,969	32	47	4·28	0·90	180·0

DAILY GAUGE HEIGHT AND DISCHARGE of Carpenter Creek near New Denver, B.C., for 1914.

Day.	April		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1			2·0	610	2·6	[illegible]
2			2·1	[illegible]	3·0	[illegible]
3			2·4	950	3·4	[illegible]
4			2·1	690	3·2	[illegible]
5			2·0	610	2·6	[illegible]
6			1·9	540	2·2	[illegible]
7			1·8	472	2·0	[illegible]
8			1·95	575	1·9	[illegible]
9			2·3	860	1·9	[illegible]
10			2·25	817	1·9	[illegible]
11			2·1	690	2·0	[illegible]
12				800	2·1	[illegible]
13			2·35	905	2·3	[illegible]
14			2·6	1,140	2·4	[illegible]
15			2·75	1,290	2·7	[illegible]
16			2·85	1,390	2·85	[illegible]
17			2·7	1,240	3·0	[illegible]
18			2·5	1,040	2·9	[illegible]
19			2·5	1,040	2·7	[illegible]
20	1·7	414	2·5	1,040	2·5	[illegible]
21		396	2·6	1,140	2·2	[illegible]
22		378	2·6	1,140	2·1	[illegible]
23	1·6	360	2·6	1,140	2·0	[illegible]
24	1·6	360	2·7	1,240	2·0	[illegible]
25		337	2·6	1,140	2·0	[illegible]
26	1·5	315		1,006	2·1	[illegible]
27	1·6	360	2·3	860	2·2	[illegible]
28		360	2·2	775	2·2	[illegible]
29	1·6	360	2·1	690	2·3	[illegible]
30	1·7	414	2·1	690	2·3	[illegible]
31			2·3	860		

DAILY GAUGE HEIGHT AND DISCHARGE of Carpenter Creek near New Denver, B.C., for 1914.

DAY.	July.		August.		September.		October.		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet	Sec.-ft	Feet.*	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet	Sec.-ft.
1	2·4	950		340	0·90	159	0·90	159	0·8	144	0·4	99
2	2·4	950	1·5	315	0·80	144	0·95	166	1·0	174	0·4	99
3	2·6	1,140	1·5	315	0·80	144	0·85	151	1·0	174	0·4	99
4	2·5	1,040	1·5	315	0·80	144	0·80	144	0·9	159	0·4	99
5	2·4	950	1·4	278	0·80	144		144	1·1	194	0·3	91
6		817	1·4	278	0·80	144	0·80	144	0·9	159	0·3	91
7	2·2	775		261	0·80	144	0·80	144	0·8	144	0·3	91
8		732	1·3	245	0·80	144	0·80	144	0·8	144	0·3	91
9	2·1	690		245	0·80	144	0·80	144	0·8	144	0·3	91
10		650	1·3	245	0·80	144	0·80	144	0·8	144	0·3	91
11	2·0	610		245	0·80	144	0·80	144	0·8	144	0·3	91
12	2·1	690	1·3	245	0·80	144	0·80	144	0·8	144		91
13	2·4	950		231	0·80	144	0·80	144	0·7	130		91
14		841	1·2	217	0·8	144	0·80	144	0·6	118		91
15	2·15	732	1·2	217	0·8	144	0·80	144	0·6	118		91
16	1·85	506	1·2	217	0·8	144	0·8	144	0·6	118		91
17	1·8	472	1·3	245	0·8	144	1·0	174	0·6	118		91
18	1·75	443	1·25	231	0·85	151	1·0	174	0·3	91		91
19	1·85	506	1·0	224	1·15	205	1·0	174	0·5	108		91
20		513	1·2	217	1·1	194	1·0	174	0·5	108	0·4	99
21		520		217	1·0	174	0·85	151	0·5	108	0·4	99
22		527	1·2	217	0·9	159	0·80	144	0·5	108	0·25	88
23		534	1·1	194	0·8	144	0·80	144	0·5	108	0·2	85
24	1·90	540		194	0·8	144	0·80	144	0·4	99	0·2	85
25	1·90	540	1·1	194	0·8	144	0·80	144	0·4	99	0·2	85
26	1·80	472		194	1·05	184		144	0·4	99	0·1	79
27		443	1·1	194	1·2	217		144	0·4	99	0·1	79
28	1·70	414		189	1·05	184		144	0·4	99	0·1	79
29	1·60	360	1·05	184	1·00	174		144	0·4	99	0·1	79
30		360	1·00	174	0·90	159	0·80	144	0·4	99	0·1	79
31	1·60	360	0·90	159			0·80	144			0·1	79

MONTHLY DISCHARGE of Carpenter Creek near New Denver, for 1914.

(Drainage area, 65 square miles.)

Month	DISCHARGE IN SECOND-FEET.				RUN-OFF	
	Maximum.	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet.
April						
May	1,390	472	905	13·9	16·0	55,700
June	1,990	540	962	14·8	16·5	57,200
July	1,140	360	646	9·94	11·5	39,700
August	340	159	233	3·58	4·13	14,300
September	217	144	157	2·42	2·70	9,340
October	174	144	148	2·28	2·63	9,100
November	194	91	126	1·94	2·16	7,500
December	99	79	92·5	1·42	1·64	5,690
period						

CARPENTER CREEK, SOUTH FORK, NEAR SANDON (3025).

Location.—In the flume back of the C.P.R. station at Sandon, behind a deserted bakery, Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Similar to Carpenter creek, New Denver, only the winters are longer, with more snow. Frazil ice is a possibility.

Gauge.—Enamel gauge, 0 feet to 3 feet, placed at the side of the box flume. Mrs. E. A. Cameron reads the gauge daily.

Flume.—The creek is flumed for several hundred feet through the townsite of Sandon. The flume is a box flume, 11.67 feet wide by 6 feet deep. For 50 feet above and below the section the slope is 0.056 feet. Kutter's formula was applied to determine the daily discharges.

Accuracy.—During high water the results are probably within 10 per cent. but at low stages, due to the gauge being only read to tenths, no accuracy can be given. A measurement made by Messrs. Webb and Gill, in April, agrees closely with the slope method.

General.—Sandon is about 6 miles from the source of the south fork of Carpenter creek, and is at an altitude of 3,488 feet. The drainage area, from the topographical map of the Geological Survey appears to be only about 12 miles. This shows a tremendous run-off per square mile during the months of May, June, and July.

The south fork has been used a great deal for mining, particularly during 1896-1902, but at present no water is used.

DAILY GAUGE HEIGHT AND DISCHARGE of south fork of Carpenter Creek near Sandon, B.C., for 1914.

DAY	April.		May.		June
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height
	Feet	Sec.-ft	Feet.	Sec.-ft	Feet
1			0·4	114	0·85
2			0·6	192	1·10
3			0·8	284	1·65
4			0·6	192	1·30
5			0·4	114	1·00
6			0·4	114	0·80
7			0·4	114	0·80
8			0·4	114	0·65
9			0·8	192	0·60
10			0·65	214	0·55
11			0·7	235	0·55
12			0·8	284	0·55
13			0·9	335	0·85
14			0·95	362	1·1
15			1·00	388	1·35
16			0·95	362	1·55
17			0·9	335	1·65
18			0·8	284	1·65
19			0·8	284	1·3
20			0·85	310	1·0
21			0·85	310	0·8
22			0·85	310	0·7
23			0·85	310	0·6
24			0·85	310	0·6
25			0·9	335	0·65
26	0·2	52	0·8	284	0·75
27	0·3	82	0·8	284	0·75
28	0·2	52	0·75	260	0·75
29	0·2	52	0·55	171	0·80
30	0·3	82	0·55	171	0·85
31			0·55	171	

DAILY GAUGE HEIGHT AND DISCHARGE of south fork of Carpenter Creek near Sandon, B.C., for 1914.—(*Con.*)

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft
1	0·95	362	0·30	82	0·10	27	0·20	52	0·2	52	0·1	27
2	1·1	444	0·30	82	0·10	27	0·20	52	0·2	52	0·1	27
3	1·35	590	0·30	82	0·10	27	0·20	52	0·2	52	0·1	27
4	1·05	416	0·20	52	0·10	27	0·20	52	0·2	52	0·1	27
5	0·9	335	0·2	52	0·10	27	0·20	52	0·2	52	0·1	27
6	0·85	310	0·2	52	0·10	27	0·20	52	0·2	52	0·1	27
7	0·85	310	0·2	52	0·10	27	0·20	52	0·2	52	0·1	27
8	0·8	284	0·2	52	0·10	27	0·20	52	0·2	52	0·1	27
9	0·75	260	0·2	52	0·10	27	0·20	52	0·2	52	0·1	27
10	0·7	235	0·2	52	0·10	27	0·20	52	0·2	52	0·1	27
11	0·65	214	0·2	52	0·10	27	0·20	52	0·2	52	0·1	27
12	0·75	260	0·2	52	0·10	27	0·20	52	0·2	52	0·1	27
13	0·75	260	0·2	52	0·10	27	0·20	52	0·2	52	0·1	27
14	0·7	235	0·2	52	0·10	27	0·20	52	0·2	52	0·1	27
15	0·7	235	0·2	52	0·10	27	0·20	52	0·1	27	0·1	27
16	0·6	192	0·2	52	0·10	27	0·20	52	0·1	27	0·1	27
17	0·55	171	0·20	52	0·10	27	0·20	52	0·1	27	0·1	27
18	0·55	171	0·20	52	0·10	27	0·20	52	0·1	27	0·1	27
19	0·50	150	0·20	52	0·20	52	0·20	52	0·1	27	0·1	27
20	0·40	114	0·20	52	0·20	52	0·20	52	0·1	27	0·1	27
21	0·30	82	0·20	52	0·20	52	0·20	52	0·1	27	0·1	27
22	0·30	82	0·20	52	0·20	52	0·20	52	0·1	27	0·1	27
23	0·30	82	0·20	52	0·20	52	0·20	52	0·1	27	0·1	27
24	0·30	82	0·20	52	0·20	52	0·20	52	0·1	27	0·1	27
25	0·30	82	0·20	52	0·20	52	0·20	52	0·1	27	0·1	27
26	0·30	82	0·20	52	0·20	52	0·20	52	0·1	27	0·1	27
27	0·30	82	0·20	52	0·20	52	0·20	52	0·1	27	0·1	27
28	0·30	82	0·20	52	0·20	52	0·20	52	0·1	27	0·1	27
29	0·30	82	0·20	52	0·20	52	0·20	52	0·1	27	0·1	27
30	0·30	82	0·10	27	0·20	52	0·20	52	0·1	27	0·1	27
31	0·30	82	0·10	27			0·20	52			0·1	27

MONTHLY DISCHARGE of south fork of Carpenter Creek near Sandon, B.C., for 1914.

Drainage area, 12 square miles.

MONTH.	DISCHARGE IN SECOND FEET				RUN-OFF		Accuracy
	Maximum	Minimum	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre-feet	
May	388	114	249	20·8	24·0	15 300	B
June	778	171	367	30·6	34·1	21 800	B
July	590	82	208	17·3	19·9	12 800	C
August	82	27	53·3	4·44	5·12	3 290	
September	52	27	37·0	3·08	3·44	2 200	
October	52	52	52·0	4·33	4·99	3 200	
November	52	27	38·7	3·22	3·59	2 300	
December	27	27	27·0	2·25	2·59	1 660	

COLUMBIA RIVER NEAR CASTLEGAR (3004).

Location.—Castlegar precinct, Nelson Water district, below Arrow lakes and above mouth of Kootenay river, at the C.P.R. bridge near Castlegar, B.C., Nelson district.

Records Available.—1913 and 1914.

Climatic Conditions.—Summers hot, with plenty of rain in May and June, but very little rain in July and August. Winters, the snowfall is not very heavy, the temperature seldom goes below O°F.; the river rarely freezes over.

Gauge.—Vertical staff gauge was used till August, when a chain gauge was established. Messrs. P. G. Farmer, J. McE. Agnew, and J. A. Turnbull read the gauges at different times during the year.

Channel.—Straight for 200 yards above and below the measuring section and gauge. A pronounced riffle in low water is lost during high water. The rise and fall of the river is about 25 feet.

Discharge Measurements.—Measurements are made from the upstream side of the railway bridge. Five measurements were made in 1914.

Accuracy.—This station is maintained chiefly to check the results obtained from Kootenay river near Glade, and Columbia river near Trail. Due to a probability of backwater, these results are not guaranteed.

DISCHARGE MEASUREMENTS of Columbia River near Castlegar, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft
Jan. 14	C. E. W. and A. J. V.	1048	380	6,800	1·66	1·7	11,300
Mar. 5	C. E. R. and A. J. V.	1672	398	6,170	1·24	0·72	7,680
May 31	J. A. Elliott	1909	515	14,100	5·82	15·12	82,100
July 28.	G. K. Beeston	1672	530	13,500	7·67	17·52	104,000
Aug. 6	G. K. B. and D. O. R. G.	1929	515	12,900	6·60	15·8	85,100

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Castlegar, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·3	9,600	0·8	8,000	0·8	8,000	1·0	8,600	6·6	33,000	17·3	91,100
2	1·2	9,200	0·8	8,000	0·8	8,000	1·0	8,600	7·0	35,000	17·9	94,600
3	1·2	9,200	0·8	8,000	0·8	8,000	1·0	8,600	7·4	37,000	18·3	96,900
4	1·2	9,200	0·7	7,700	0·8	8,000	1·0	8,600	7·6	38,000	18·8	99,800
5	1·2	9,200	0·7	7,700	0·8	8,000	1·1	8,900	7·8	39,000	19·2	102,000
6	1·1	8,900	0·7	7,700	0·8	8,000	1·2	9,200	8·1	40,500	19·3	103,000
7	1·1	8,900	0·7	7,700	0·8	8,000	1·2	9,200	8·5	42,700	19·1	102,000
8	1·1	8,900	0·6	7,400	0·8	8,000	1·3	9,600	8·9	44,800	19·0	101,000
9	1·2	9,200	0·6	7,400	0·8	8,000	1·5	10,200	9·4	47,500	18·9	100,000
10	1·3	9,600	0·5	7,100	0·8	8,000	1·8	11,300	9·9	50,200	18·4	97,500
11	1·3	9,600	0·5	7,100	0·8	8,000	2·0	12,000	10·2	51,800	18·4	97,500
12	1·3	9,600	0·5	7,100	0·8	8,000	2·3	13,200	10·8	55,100	18·5	98,000
13	1·4	9,900	0·5	7,100	0·8	8,000	2·5	14,000	11·4	58,400	18·7	99,200
14	1·5	10,200	0·5	7,100	0·8	8,000	2·7	14,800	12·0	61,700	18·8	99,800
15	1·6	10,600	0·5	7,100	0·8	8,000	2·9	15,600	12·6	65,000	19·0	101,000
16	1·6	10,600	0·4	6,800	0·8	8,000	3·0	16,000	13·6	70,500	19·6	105,000
17	1·5	10,200	0·4	6,800	0·8	8,000	3·3	17,200	14·0	72,700	20·6	111,000
18	1·5	10,200	0·4	6,800	0·8	8,000	3·6	18,500	14·2	73,800	21·4	115,000
19	1·4	9,900	0·5	7,100	0·8	8,000	3·9	19,800	14·6	76,000	22·2	120,000
20	1·3	9,600	0·5	7,100	0·8	8,000	4·[illegible]	21,200	14·8	77,100	22·6	123,000
21	1·3	9,600	0·6	7,400	0·9	8,300	4·5	22,600	15·2	79,300	23·0	125,000
22	1·3	9,600	0·6	7,400	0·9	8,300	4·8	24,000	1[illegible]·2	79,300	22·6	123,000
23	1·3	9,600	0·6	7,400	0·9	8,300	5·1	25,500	15·4	80,500	22·4	122,000
24	1·3	9,600	0·7	7,700	0·9	8,300	5·4	27,000	1[illegible]·7	82,100	22·2	120,000
25	1·2	9,200	0·7	7,700	0·9	8,300	5·6	28,000	1[illegible]·0	83,800	21·8	118,000
26	1·2	9,200	0·8	8,000	1·0	8,600	5·8	29,000	1[illegible]·2	84,900	21·2	114,000
27	1·1	8,900	0·8	8,000	1·0	8,600	6·0	30,000	1[illegible]·4	86,100	21·0	113,000
28	1·0	8,600	0·8	8,000	1·0	8,600	6·2	31,000	16·6	87,200	20·8	112,000
29	1·0	8,600	....	....	1·0	8,600	6·2	31,000	1[illegible]·6	87,200	20·6	111,000
30	0·9	8,300	....	....	1·1	8,900	6·4	32,000	16·[illegible]	88,300	20·4	110,000
31	0·9	8,300	....	....	1·1	8,900	....	....	17·0	89,400	....	....

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Castlegar, for 1914.

DAY.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	20·6	111,000	....	89,400	11·3	57,800	6·3	31,500	5·[illegible]	25,000	3·8	19,400
2	20·8	112,000	....	86,600	11·1	56,700	6·2	31,000	5·0	25,000	4·0	20,200
3	21·0	113,000	....	83,800	11·0	56,200	6·4	32,000	4·9	24,500	4·1	20,700
4	21·6	116,000	....	83,000	10·8	55,100	6·6	33,000	4·8	24,000	4·0	20,200
5	22·1	120,000	....	82,300	10·7	54,500	6·9	34,500	4·9	24,500	4·0	20,200
6	22·8	124,000	15·6	81,600	10·5	53,500	7·0	35,000	5·0	25,000	3·8	19,400
7	23·2	126,000	15·6	81,600	10·4	52,900	7·2	36,000	5·2	26,000	3·4	17,700
8	23·6	128,000	15·4	80,500	10·2	51,800	7·3	36,500	5·1	25,500	3·5	18,100
9	23·6	128,000	15·0	78,200	10·0	50,800	6·8	34,000	5·0	25,000	3·4	17,700
10	23·4	127,000	14·8	77,100	9·9	50,200	6·6	33,000	5·1	25,500	3·3	17,200
11	23·3	127,000	14·6	76,000	9·7	49,100	6·6	33,000	5·0	25,000	3·2	16,800
12	23·2	126,000	14·2	73,800	9·5	48,100	6·5	32,500	5·1	25,500	3·1	16,400
13	23·1	126,000	13·9	72,100	9·4	47,500	6·5	32,500	5·1	25,500	3·0	16,000
14	23·6	128,000	13·6	70,500	9·2	46,400	6·4	32,000	5·0	25,000	2·8	15,200
15	23·8	129,000	13·3	68,900	9·0	45,400	6·2	31,000	5·0	25,000	2·8	15,200
16	24·0	131,000	13·2	68,300	8·7	43,800	5·9	29,500	5·0	25,000	2·8	15,200
17	24·3	133,000	13·0	67,200	8·4	42,200	5·8	29,000	4·9	24,500	2·7	14,800
18	24·0	131,000	12·9	66,600	8·1	40,500	5·6	28,000	4·8	24,000	2·6	14,400
19	23·6	128,000	12·9	66,600	7·9	39,500	5·8	29,000	4·8	24,000	2·4	13,600
20	23·4	127,000	12·8	66,100	7·7	38,500	5·9	29,500	4·8	24,000	2·3	13,200
21	23·2	126,000	12·8	66,100	7·6	38,000	5·9	29,500	4·7	23,500	2·2	12,800
22	22·8	124,000	12·7	65,500	7·4	37,000	5·8	29,000	4·4	22,100	2·1	12,400
23	22·2	120,000	12·6	65,000	7·1	35,500	5·8	29,000	4·5	22,600	2·0	12,000
24	21·6	116,000	12·6	65,000	6·9	34,500	5·7	28,500	4·4	22,100	1·9	11,600
25	21·3	115,000	12·5	64,400	6·7	33,500	5·7	28,500	4·2	21,200	1·8	11,300
26	20·0	107,000	12·4	63,900	6·6	33,000	5·6	28,000	4·0	20,200	1·8	11,300
27		104,000	12·4	63,900	6·6	33,000	5·5	27,500	3·9	19,800	1·7	10,900
28	...	101,000	12·2	62,800	6·5	32,500	5·4	27,000	3·8	19,400	1·6	10,600
29	....	98,000	12·0	61,700	6·3	31,500	5·3	26,500	3·9	19,800	1·5	10,200
30	....	95,100	11·7	60,000	6·3	31,500	5·2	26,000	4·0	20,200	1·4	9,800
31		92,300	11·5	58,900	....	....	5·1	25,500			1·4	9,800

MONTHLY DISCHARGE of Columbia River near Castlegar, for 1914.

(Drainage area, 15,000 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.		RUN-OFF.	
	Mean.	Per square mile.	Depth in inches on Drainage area.	Tota in acre
January	9,000	0·6	0·69	55
February	7,370	0·49	0·51	40
March	7,400	0·49	0·56	45
April	17,400	1·16	1·29	1,01
May	54,400	3·62	4·17	3,3
June	93,900	6·25	6·97	5,5
July	118,000	7·87	9·07	7,2
August	72,400	4·83	5·57	4,1
September	44,300	2·96	3·30	2,6
October	27,000	1·80	2·08	1,6
November	23,400	1·56	1·74	1,3
December	16,100	1·07	1·23	99

NOTE.—In this case the mean discharge represents the difference between the mean discharges of the Columbia [illegible]r Trail and the Kootenay near Glade.

MONTHLY DISCHARGE of Columbia River near Castlegar, for 1914—*Concluded.*

(Drainage area, 15,000 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	*Total in acre-feet.
January	10,600	8,300	9,410	0·63	0·73	579,000
February	8,000	6,800	7,440	0·50	0·52	413,000
March	8,900	8,600	8,180	0·54	0·62	503,000
April	32,000	8,600	17,800	1·18	1·32	1,060,000
May	89,460	33,000	64,400	4·29	4·95	3,960,000
June	125,000	91,100	108,000	7·2	8·03	6,[illegible]30,000
July	133,000	92,300	119,000	7·93	9·14	7,320,000
August	89,400	58,900	71,500	4·76	5·49	4,400,000
September	57,800	31,500	44,000	2·03	3·27	2,620,000
October	36,500	25,500	30,600	2·04	2·35	1,880,000
November	26,000	19,400	23,600	1·57	1·75	1,400,000
December	20,700	9,900	15,000	1·00	1·15	922,000

COLUMBIA RIVER NEAR REVELSTOKE (3007).

Location.—S.E. ¼ section 33, township 23, range 2, west 6th, meridian, above the mouth of Illecillewaet river on downstream side of highway bridge near Revelstoke.

Records Available.—1912-13-14, during open season.

Climatic Conditions.—In 1914 the precipitation was 40.5 inches, of which about 10 feet was snowfall. The summers are hot, with considerable rainfall. The winters are fairly cold, as low as -20°F. some seasons, with very heavy snowfall. Frazil ice forms in large quantities.

Gauge.—Chain gauge used and read daily during open season by Mr. J. H Jones.

Channel.—About 1,000 feet wide, controlled by a fairly permanent sandbar. 500 yards below. Shift in 1913 apparently caused by the building of a breakwater at the control.

Discharge Measurements.—Sixteen well distributed measurements taken during 1911-12-13-14. Miscellaneous ice-cover metering taken on February 27, 1912. Discharge, 4,460 c.f.s.

Accuracy.—Accurate gauge reading, fair conditions for metering. These results are considered to be within 3 per cent.

DISCHARGE MEASUREMENTS of Columbia River near Revelstoke, B.C., for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
25	J. A. Elliott	1909	846	11,500	6·38	13·2	73,600
20	"	1672	835	8,190	5·93	11·6	48,500
7	J. A. E., C. E. R.	1927	825	7,940	4·75	9·5	37,700
8	J. A. E	1909	710	5,750	3·18	7·0	18,300
18	"	1909	705	4,210	2·66	5·1	11,250

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Revelstoke, B.C., for 1914.

Day.	May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet.	Sec.-ft.
1		Average	11·6	52,700
2		35,000	13·18	67,[illegible]
3		....	15·25	88,700
4			16·35	100,000
5			16·05	97,000
6			15·3	89,000
7			14·1	76,500
8			13·3	68,000
9			12·8	63,200
10			12·9	64,700
11			13·3	68,000
12			13·9	74,000
13			15·2	88,200
14			16·2	98,[illegible]
15			16·9	106,000
16			17·8	116,000
17			18·8	129,000
18			19·0	132,000
19			19·0	132,[illegible]
20	11·8	54,000	17·4	113,000
21	12·2	56,500	16·1	98,200
22	12·4	59,400	15·6	90,900
23	12·9	64,600	14·6	81,[illegible]
24	13·6	71,500	14·1	76,800
25	13·8	73,500	14·1	77,[illegible]
26	13·5	70,500	14·9	85,200
27	12·8	63,700	15·4	90,500
28	12·2	58,100	15·4	90,800
29	11·4	51,000	15·7	[illegible]
30	10·8	46,400	16·1	97,[illegible]
31	10·96	47,400		

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Revelstoke, B.C., for 1914.

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	16·1	97,900	14·7	82,700	10·5	43,600	8·9	31,300	6·8	18,200	5·5	12,400
2	17·1	109,000	15·0	86,000	10·8	46,000	8·6	29,200	6·9	18,700	5·4	12,000
3	18·1	121,000	15·0	86,000	10·7	45,200	8·3	27,100	7·0	19,200	5·3	11,600
4	19·1	133,000	15·0	86,000	10·5	43,600	7·9	24,400	6·9	18,700		10,900
5	19·2	134,000	15·0	86,000	10·4	42,800	7·6	22,600	6·8	18,200		[illegible]500
6	19·0	132,000	14·4	79,500	9·8	38,000	7·4	21,400	6·6	17,200		[illegible]300
7	18·2	122,000	14·2	77,500	9·7	37,200	7·2	20,200	6·4	16,200		[illegible]900
8	18·0	120,000	14·4	79,500	10·6	44,400	7·2	20,200	6·3	15,700		[illegible]900
9	17·2	110,000	13·4	69,500	10·0	39,600	7·3	20,800	6·3	15,700		
10	17·4	112,000	12·3	59,000	9·7	37,200	7·2	20,200	6·2	15,200		
11	18·6	127,000	11·9	55,400	9·3	34,100	7·1	19,700	6·3	15,700		
12	18·4	124,000	11·5	51,800	8·6	29,200	6·9	18,700	6·1	14,800		[illegible]rage
13	18·2	122,000	11·7	53,600	8·2	26,400	6·8	18,200	6·0	14,400		[illegible]000
14	20·7	146,000	12·4	59,900	8·1	25,700	6·7	17,700	5·9	14,000		
15	19·3	136,000	12·9	64,700	7·6	22,600	6·6	17,200	5·8	13,600		
16	18·8	129,000	12·8	63,700	6·8	18,200	7·7	23,200	5·7	13,200		
17	16·3	100,000	12·6	61,700	7·0	19,200	7·9	24,400	5·4	12,000		
18	16·2	99,000	12·5	60,800	7·2	20,200	7·8	23,800	5·3	11,600		
19	16·8	105,000	12·5	60,800	8·0	25,000	7·7	23,200	5·3	11,600		
20	16·1	98,000	12·8	63,700	7·7	23,200	7·0	19,200	5·2	11,200		
21	15·3	89,300	13·0	65,700	7·6	22,600	6·6	17,200	5·2	11,200		
22	14·6	81,600	12·9	64,700	7·5	22,000	6·4	16,200	5·2	11,200		
23	14·2	77,500	12·6	61,700	[illegible]	21,400	6·4	16,200	5·3	11,600		
24	14·1	76,500	12·0	56,300		[illegible]	6·3	15,700	5·4	12,000		
25	14·2	77,500	11·5	51,800			6·2	15,200	5·5	12,400		
26	13·7	72,500	11·3	50,200	8·0		6·1	14,800	5·7	13,200		
27	13·4	69,500	11·4	51,000	9·7		6·0	14,400	5·6	12,800		
28	13·1	66,600	11·6	52,700	9·6	36,400	5·9	14,000	5·7	13,200		
29	12·9	64,[illegible]	11·8	54,500	9·6	36,400	5·7	13,200	5·7	[illegible]		
30	13·2	67,[illegible]	10·5	43,600	9·1	32,700	6·2	15,200	5·6	[illegible]		
31	13·9	74,500	10·4	42,800			6·8	18,200				

MONTHLY DISCHARGE of Columbia River near Revelstoke, for 1914

(Drainage area, 9,000 square miles.)

Month.	Discharge in Second-Feet				Run-Off.		Accuracy
	Maximum	Minimum	Mean	Per Square Mile	Depth in inches on Drainage Area	Total in Acre-feet.	
May	73,500		44,500	4·94	5·70	2,740,000	
June	132,000	52,700	90,200	10·0	11·2	5,370,000	B
July	146,000	64,700	103,000	11·4	13·1	6,330,000	B
August	86,000	42,800	66,700	7·41	2·54	4,100,000	A
September	46,000	18,200	31,700	3·52	3·93	1,890,000	A
October	31,300	13,200	19,900	2·21	2·55	1,220,000	A
November	19,200	11,200	14,300	1·59	1·77	851,000	A
December	12,400		8,750	0·97	1·12	538,000	

FOUR-MILE CREEK BELOW HEWITT MILL (3027).

Location.—At bridge about 3 miles from mouth, near Silverton, and about a mile below Hewitt Mill. Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Summers, hot with light rainfall after June. Winters not very severe, with moderate snowfall. The creek does not stay frozen for more than a few days at a time. Frazil and anchor ice may form at times.

Gauge.—Vertical staff, enamel, read daily by Mr. Geo. Stilwell, superintendent at Hewitt mill.

Channel.—Swift water, with rocky bed. Apparently permanent.

Discharge Measurements.—Seven measurements were made in 1914.

Accuracy.—The measurements may not be very accurate. Daily gauge readings are obtained. Accuracy not guaranteed below gauge height, 0.5. Accuracy above 0.5 and below 1.5, 10 per cent. Accuracy above 1.5, 20 per cent.

General.—Four-mile creek is a small creek flowing from the east into Slocan lake, near Silverton. It drains a mountainous country, abundant in mineral wealth, and the creek is used for mining purpose by Standard, Hewitt, and Van Roi mines.

DISCHARGE MEASUREMENTS of Four Mile Creek, Silverton, below Hewitt M for 1914.

Date.	Hydrographer.	Meter No	Width	Area of Section	Mean Velocity.	Gauge Height	Dis-
			Feet	Sq. ft	Ft. per sec	Feet	
April 19	C. E. W., D. O'B. G.	1,048	26.5	43.0	3.97	0.85	
May 12	J. A. E., G. K. B.	1,672	33.5	63.5	4.69	1.20	
June 11	G. K. B., C. E. R.	1,927	30.0	57.2	4.81	1.15	
June 18	G. K. B.	1,927	37.0	95.6	5.01	2.10	
July 9	D. O'B. G., J. A. E.	1,929	28.0	66.0	4.30	1.25	
Aug. 18	D. O'B. G.	1,929	24.0	33.1	2.64	0.5	
Nov. 3	J. A. E., G. K. B.	1,909	22.0	32.5	3.12	0.5	

[1] Meter out of order

DAILY GAUGE HEIGHT AND DISCHARGE of Four-Mile River, below Hewitt Mill, for 1914.

Day	May		June	
	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.
1	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	[illegible]		

Daily Gauge Height and Discharge of Four-Mile River, below Hewitt Mill, for 1914.

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	F[illegible].	Sec.-ft.	Feet.	Sec.-ft
1	1·65	436	0·70	140	0·30	65	0·55	108	0·62	122	0·10	41
2	1·7	455	0·70	140	0·30	65	0·50	98	0·67	133	0·15	46
3	1·7	455	0·70	140	0·30	65	0·50	98	0·65	129	0·15	46
4	1·7	455	0·70	140	0·30	65	0·45	89	0·55	108	0·10	41
5	1·6	417	0·70	140	0·25	59	0·45	89	0·50	98	0·10	41
6	1·5	381	0·70	140	0·32	68	0·45	89	0·45	89	0·10	41
7	1·4	346	0·80	165	0·40	80	0·45	89	0·45	89	0·10	41
8	1·4	346	0·70	140	0·40	80	0·40	80	0·45	89	0·10	41
9	1·3	312	0·60	118	0·40	80	0·40	80	0·45	89	0·10	41
10	1·25	296	0·60	118	0·37	76	0·40	80	0·45	89	0·05	36
11	1·2	280	0·60	118	0·35	73	0·40	80	0·40	80	0·05	36
12	1·2	280	0·55	108	0·35	73	0·40	80	0·40	80	0·05	36
13	1·25	296	0·50	98	0·35	73	0·35	73	0·40	80	0·05	36
14	1·3	312	0·50	98	0·38	77	0·35	73	0·45	89	0·02	34
15	1·25	296	0·50	98	0·40	80	0·30	65	0·30	65	0·05	36
16	1·22	286	0·50	98	0·50	98	0·30	65	0·30	65	0·05	36
17	1·07	241	0·55	108	0·55	108	0·55	108	0·25	59	0·05	36
18	1·00	220	0·50	98	0·65	129	0·55	108	0·25	59	0·00	32
19	1·00	220	0·45	89	0·65	129	0·55	108	0·25	59	0·00	32
20	1·00	220	0·45	89	0·60	118	0·55	108	0·25	59	0·00	32
21	0·87	183	0·42	84	0·55	108	0·52	102	0·25	59	−0·05	28
22	0·85	177	0·40	80	0·50	98	0·40	80	0·25	59	−0·10	25
23	0·80	165	0·40	80	0·50	98	0·40	80	0·25	59	−0·18	21
24	0·80	165	0·40	80	0·50	98	0·40	80	0·25	59	−0·20	20
25	0·80	165	0·35	73	0·50	98	0·40	80	0·20	52	−0·10	25
26	0·80	165	0·35	73	0·50	98	0·40	80	0·25	59	−0·00	[illegible]
27	0·80	165	0·30	65	0·68	136	0·35	73	0·25	59	−0·05	[illegible]
28	0·75	152	0·30	65	0·60	118	0·35	73	0·25	59	−0·05	[illegible]
29	0·75	152	0·35	73	0·60	118	0·35	73	0·25	59	−0·00	[illegible]
30	0·70	140	0·35	73	0·55	108	0·46	91	0 20	52	0·00	[illegible]
31	0·70	140	0·30	65	.....	....	0·50	98	.....	.....	0·00	[illegible]

Monthly Discharge of Four-Mile Creek near Silverton, for 1914.

Drainage area, 41 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet	Accur
May	494	190	328	8·00	9·22	10,200	D
June	758	312	475	11·6	12·9	28,300	D
July	455	140	268	6·54	7·54	16,500	D
August	165	65	103	2·51	2·89	6,300	B
September	136	59	91 3	2·23	2·50	5,430	B
October	108	65	86·3	2·10	2·42	5,300	B
November	133	52	76·9	1 88	2·10	4,580	B
December	46	20	34·8	0·85	0·98	2,140	B

FOUR MILE CREEK ABOVE HEWITT INTAKE (3028).

Location.—Immediately above Hewitt intake, about 5 miles from Silverton. Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Similar to Four-mile creek below Hewitt mill.

Gauge.—Vertical staff, enamel, read daily by Mr. P. Harding, of Van Roi mill.

Channel.—Water smooth and swift, controlled by Hewitt diversion dam.

Discharge Measurements.—Five measurements were made in 1914, by wading.

Accuracy.—No high-water measurements were made. The gauge readings have been somewhat intermittent. The results may not be closer than 20 per cent.

General.—Granite creek flows in below this station and above the station located below Hewitt mill.

DISCHARGE MEASUREMENTS of Four Mile Creek near Silverton, above Hewitt Intake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 19	G. E. W., D. O'B. G.	1048	38·5	62·7	1·27	1·05	80·1
June 11	G. K. B., C. E. R	1927	28·2	55·0	3·55	1·52	195·0[1]
July 9	J. A. E., D. O'B. G	1929	30·5	57·8	3·56	1·58	206·0
Aug 18	D. O'B. G	1929	26	26·9	1·86	0·8	50·1
Nov 3	J. A. E., G. K. B	1909	25	22·6	2·09	0·8	47·4

[1] Different section.

DAILY GAUGE HEIGHT AND DISCHARGE of Four Mile Creek above Hewitt Intake near Silverton, for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft
1			0·9	60·0	2·05	[illegible]
2			1·2	110·0	2·3	[illegible]
3			1·55	198·0	2·0	[illegible]
4			1·7	241·0	1·9	[illegible]
5			1·65	226·0	1·8	[illegible]
6			1·6	212·0	1·6	[illegible]
7			1·55	198·0	1·6	[illegible]
8			1·5	183·0	1·6	[illegible]
9			1·65	226·0	1·5	[illegible]
10			1·7	241·0	1·7	[illegible]
11			1·6	212·0	1·7	[illegible]
12			1·5	183·0	1·8	[illegible]
13			1·5	183·0	1·9	[illegible]
14			1·8	271·0	1·9	[illegible]
15			2·0	332·0	2·1	[illegible]
16			2·15	381·0	2·2	[illegible]
17			2·1	365·0	2·3	[illegible]
18			1·9	301·0	2·2	[illegible]
19			1·7	241·0	2·0	[illegible]
20			1·7	241·0	2·2	[illegible]
21			1·8	271·0	2·0	[illegible]
22			1·9	301·0	1·9	[illegible]
23			1·9	301·0	1·7	[illegible]
24	0·7	39·5	1·8	271·0	1·6	[illegible]
25	0·7	39·5	1·6	212·0	1·6	[illegible]
26	0·6	31·7	1·45	170·0	1·5	[illegible]
27	0·7	39·5	1·4	157·0	1·5	[illegible]
28	0·6	31·7	1·5	183·0	1·4	[illegible]
29	0·8	48·0	1·6	212·0	1·5	[illegible]
30	0·8	48·0	1·8	271·0	1·6	[illegible]
31	.....	.....	1·9	301·0	.....	

DAILY GAUGE HEIGHT AND DISCHARGE of Four Mile Creek above Hewitt Intake near Silverton, for 1914.

Day.	July.		August		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·5	183·0	1·0	71·5	0·80	48·0	0·82	50·4	0·8	48·0	0·5	26·7
2	..	183·0	1·0	71·5	0·75	43·8	0·82	50·4	0·9	60·0	0·48	25·2
3	...	183·0	1·0	71·5	0·75	43·8	0·80	48·0	0·82	50·4	0·45	23·7
4		183·0	1·0	71·5	0·75	43·8	0·78	46·3	0·8	48·0	0·4	21·2
5		183·0	0·9	60·0	0·75	43·8	0·78	46·3	0·85	54·0	0·4	21·2
6		183·0	0·9	60·0	0·55	29·0	0·72	41·2	0·82	50·4	0·4	21·2
7		183·0	1·0	71·5	0·50	26·2	0·69	37·9	0·78	46·3	0·5	26·2
8		183·0	1·0	71·5	0·60	31·7	0·70	39·5	0·7	39·5	0·5	26·2
9	1·5	183·0	1·0	71·5	0·62	33·3	0·68	37·9	0·72	41·2	0·5	26·2
10	1·45	170·0	1·0	71·5	0·62	33·3	0·68	37·9	0·7	39·5	0·5	26·2
11	1·45	170·0		70·0	0·68	37·9	0·7	39·5	0·7	39·5	0·45	23·7
12	1·6	212·0		65·0	0·68	37·9	0·68	37·9	0·7	39·5	0·45	23·7
13	1·65	226·0		60·0	0·68	37·9	0·65	35·6	0·68	37·9	Ice	20·0
14	1·65	226·0		60·0	0·68	37·9	0·62	33·3	0·65	35·6		18·0
15	1·65	226·0		60·0	0·68	37·9	0·6	31·7	0·62	33·3		17·0
16	1·45	170·0		55·0	0·60	31·7	0·6	31·7	0·57	30·0		16·0
17	1·25	121·0		50·0	0·68	37·9	0·82	50·4	0·60	31·7		15·0
18	1·25	121·0	0·8	48·0	0·78	46·3	0·88	57·6	0·60	31·7		15·0
19	1·35	144·0	0·9	60·0	0·97	68·0	0·85	54·0	0·60	31·7		15·0
20	1·30	132·0	0·95	65·8	0·98	69·2	0·78	46·3	0·58	30·6		16·0
21	1·15	100·0	0·9	60·0	0·85	54·0	0·7	39·5	0·60	31·7		16·0
22	1·15	100·0	0·95	65·8	0·88	57·6	0·7	39·5	0·58	30·6	0·3	16·8
23	1·20	110·0	0·9	60·0	0·78	46	0·68	37·9	0·55	29·0	0·3	16·8
24	1·10	90·0	1·0	71·5	0·80	48·0	0·65	35·6	0·52	27·5	0·3	16·8
25	1·10	90·0	1·0	71·5	0·80	48·0	0·65	35·6	0·5	26·2	0·25	13·6
26	1·1	90·0	0·85	54·0	0·85	54·0	0·65	35·6	0·55	29·0	0·25	13·6
27	1·1	90·0	0·85	54·0	0·95	65·8	0·62	33·3	0·52	27·5	0·25	13·6
28	1·1	90·0	0·85	54·0	0·95	65·8	0·6	31·7	0·5	26·2	0·25	13·6
29	1·1	90·0	0·85	54·0	0·95	65·8	0·6	31·7	0·5	26·2	0·25	13·6
30	1·1	90·0	0·85	54·0	0·88	57·6	0·67	35·4	0·5	26·2	0·25	13·6
31	1·0	71·5	0·80	48·0			0·7	39·5			0·20	12·5

MONTHLY DISCHARGE of Four Mile Creek near Silverton, for 1914.

(Drainage area, 30 square miles.)

MONTH	DISCHARGE IN SECOND-FEET			RUN-OFF			
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet	Accuracy
May	381	60	[illegible]	[illegible]	[illegible]	[illegible]	D
[illegible]	430	177	290	[illegible]	[illegible]	17,300	D
[illegible]	226	71·5	148	[illegible]	[illegible]	[illegible]	
[illegible]	71·5	48	62·4	2·08	2·40	[illegible]	
September	69·2	26·2	[illegible]	[illegible]	[illegible]	[illegible]	C
October	57·6	31·7	[illegible]	[illegible]	[illegible]	[illegible]	C
November	60·0	26·2	[illegible]	[illegible]	[illegible]	[illegible]	C
December	26·7	12·5	18·8	[illegible]	[illegible]	[illegible]	

GOAT RIVER NEAR ERICKSON (3031).

Location.—Immediately above bridge near Erickson, and 5 miles from Creston. Nelson district.

Records Available.—May to November, 1914.

Climatic Conditions.—Similar to Nelson (see Kootenay river near Nelson), being affected by Kootenay lake, only a few miles distant. The river generally freezes over, however, for two or three weeks at a time, but seldom for the whole winter. Frazil ice may be expected.

Gauge.—Vertical staff gauge, located immediately above head of canyon, 20 yards from Canyon Siding station, on C.P.R. The control is permanent.

Channel.—At the gauge, permanent; below measuring section, shifting.

Discharge Measurements.—Seven measurements were made in 1914 from the highway bridge below the canyon, one-quarter mile from Erickson. This section is temporary. One measurement was made on December 21, under ice conditions, and a discharge of 261 c.f.s. was obtained.

General.—Goat river is a large stream discharging into Kootenay river immediately above Kootenay lake. The drainage area is about 275 square miles of mountainous country. There are however, no high peaks, and it is not probable that the stream is glacial fed. During August the river may get very low; in fact the discharge was lower at the end of August than at the end of December, 1914.

The canyon near Erickson affords a good power, which will probably be harnessed in the future. A head of at least 100 feet may be obtained, and the low flow is probably in the neighborhood of 100 c.f.s.

Accuracy.—Daily gauge readings are obtained. The gauge control is permanent. The measurements are fair, and the gauge-height discharge curve is very good. Accuracy, 5 per cent.

DISCHARGE MEASUREMENTS of Goat River near Erickson, for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Dis
1914			Feet.	Sq. ft.	Ft. per sec.	Feet.	Se
May 8	C. E. R., G. K. B	1672	99	549	4·55	3·[illegible]	
May 28	J. A. Elliott	1909	99	589	5·00	3·5	
June 18	C. E. R	1672	103	711	6·02	4·95	
July 21	D. O'B. G.	1929	87	431	1·7	0·00	
Aug. 4	do	1929	79	367	0·95	−1·10	
Oct. 18	do	1929	96	394	1·26	−0·[illegible]	
Dec. 21	J. A. E., C. B. [illegible]	1909	32	22·9	1·14	−1·20	

[1] Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Goat River near Erickson, B.C., for 1914.

Day	May Gauge Height	May Discharge	June Gauge Height	June Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.
1			[illegible]	[illegible]
2			[illegible]	[illegible]
3			[illegible]	[illegible]
4			[illegible]	[illegible]
5			[illegible]	[illegible]
6			[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]
9		[illegible]	[illegible]	[illegible]
10	[illegible]		[illegible]	[illegible]
11		[illegible]	[illegible]	[illegible]
12		[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]		[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]		[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]		[illegible]
24		[illegible]	[illegible]	[illegible]
25		[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]		[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]
29		[illegible]	[illegible]	[illegible]
30		[illegible]	[illegible]	[illegible]
31	[illegible]	[illegible]		

DAILY GAUGE HEIGHT AND DISCHARGE of Goat River near Erickson, B.C., for 1914.

DAY.	July.		August.		September.		October.		November.		December	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·70	2,310	−0·95	400	−1·60	205	−1·10	355	0·10	785	−0·8	[illegible]
2	2·65	2,270	−1·00	385	−1·60	205	−1·10	355	0·40	930	−0·85	[illegible]
3	2·70	2,310	−1·10	355	−1·60	205	−1·00	385	1·30	1,410	−0·85	[illegible]
4	2·70	2,310	−1·10	355	−1·60	205	−1·15	340	1·30	1,410	−0·80	445
5	2·25	2,000	−1·10	355	−1·60	205	−1·10	355	1·45	1,490	−0·80	445
6	1·95	1,800	−1·10	355	−1·60	205	−1·15	340	1·90	1,760	−0·90	[illegible]
7	1·65	1,610	−1·20	325	−1·60	205	−1·10	355	1·50	1,520	−0·90	[illegible]
8	1·55	1,560	−1·20	325	−1·60	205	−1·10	355	1·9	1,760	−0·90	[illegible]
9	1·40	1,460	−1·20	325	−1·50	235	−1·10	355	1·75	1,670	−0·90	[illegible]
10	1·10	1,300	−1·20	325	−1·50	235	−1·08	361	1·45	1,490	−0·90	415
11	1·05	1,270	−1·20	325	−1·50	235	−1·05	370	1·1	1,300	−0·90	415
12	0·75	1,100	−1·20	325	−1·50	235	−1·00	385	0·8	1,130	−1·00	385
13	1·00	1,240	−1·20	325	−1·50	235	−1·00	385	0·35	900	ice	385
14	1·30	1,410	−1·20	325	−1·40	265	−1·00	385	0·05	765	......	[illegible]
15	1·15	1,330	−1·20	325	−1·35	280	−0·90	415	0·0	745	......	[illegible]
16	0·80	1,130	−1·20	325	−1·30	295	−0·70	480	−0·05	725	..	[illegible]
17	0·50	980	−1·15	340	−1·20	325	−0·55	530	−0·05	725	.	
18	0·35	900	−1·30	295	−0·90	415	−0·40	585	−0·15	685	.	
19	0·30	880	−1·35	280	−0·50	550	−0·25	645	−0·20	665	.	
20	0·25	850	−1·40	265	−0·40	585	−0·25	645	−0·25	645	. . .	
21	0·10	785	−1·40	265	−0·55	530	−0·45	565	−0·30	625	. . .	
22	−0·10	705	−1·40	265	−0·65	500	−0·60	515	−0·35	605	. . .	
23	−0·30	625	−1·40	265	−0·85	430	−0·65	495	−0·40	585	. .	
24	−0·30	625	−1·40	265	−1·00	385	−0·70	480	−0·40	585	.	
25	−0·45	565	−1·40	265	−1·00	385	−0·70	480	−0·50	550	....	
26	−0·50	550	−1·50	235	−1·05	370	−0·70	480	−0·50	550	.	
27	−0·50	550	−1·50	235	−1·10	355	−0·65	500	−0·50	550	.	
28	−0·60	515	−1·50	235	−1·19	355	−0·60	515	−0·50	550	.....	
29	..	480	−1·60	205	−1·10	355	−0·65	500	−0 50	550	.	
30	−0·80	445	−1·60	205	−1·10	355	−0·50	550	−0·70	489	. .	
31	−0·90	415	−1·60	205	. . .	.....	−0·40	585	. . .	.....	.	

MONTHLY DISCHARGE of Goat River near Erickson, B.C., for 1914.

(Drainage area, 276 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June	5,780	1,730	3,200	11·6	12·9	190,000
July	2,310	415	1,170	4·25	4·90	71,900
August	400	205	299	1·08	1·24	18,400
September	585	205	318	1·15	1·28	18,900
October	645	340	440	1·59	1·83	27,100
November	1,760	480	938	3·40	3·79	55,800

KASLO CREEK (3029).

Location.—At the second highway bridge from the mouth near Kaslo. Nelson district.

Records Available.—June to December, 1914.

Climatic Conditions.—From December 1, 1913, to November 30, 1914, the precipitation at Kaslo was 24·4 inches. The summers are hot and generally dry in July and August. The winters are mild, the temperature seldom going below 0°F. The snowfall is not very heavy, and considerable rain falls in the fall and spring. The creek freezes over during cold spells, but seldom for more than two weeks at a time. Frazil ice is a possibility.

Gauge.—A chain gauge is read daily by Mr. W. F. Hurst, of Kaslo.

Channel.—The bed of the stream is full of large boulders, but apparently permanent, and the water is very fast and not at right angles to the bridge.

Discharge Measurements.—Five well distributed measurements were made in 1914.

Accuracy.—Daily gauge readings are obtained, the measurements may not be very accurate, and the gauge height discharge curve seems fairly good. The results should be well within 15 per cent.

General.—Kaslo creek is a turbulent mountain stream, about 25 miles long (two forks), flowing eastward into Kootenay lake, near Kaslo. The drainage area is about 120 square miles of country containing valuable mineral deposits. Four miles from the mouth the stream divides into what are known as North and South Forks of Kaslo creek. It is along the North Fork that the old narrow gauge railway (Great Northern) was built during the rush several years ago. The narrow gauge has long been out of commission, and, in 1914, the C.P.R. completed their line from Kaslo to Sandon and Rosebery.

Kaslo creek and its tributaries are used still for mining purposes, and the town of Kaslo has a water-power development for lighting purposes, near the mouth.

DISCHARGE MEASUREMENTS of Kaslo Creek near Kaslo, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	[illegible]	Ft. per sec.	Feet.	Sec.-ft.
[illegible] 23	J. A. E.	1172	64	[illegible]	[illegible]	2.9	[illegible]
[illegible] 17	C. E. R.	1172	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] 22	"	1172	[illegible]	[illegible]	[illegible]	[illegible]	270
[illegible] 2	J. A. E.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] 5	C. E. R., G. K. B.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	354
							195

DAILY GAUGE HEIGHT AND DISCHARGE of Kaslo Creek near Kaslo, B.C., for 1914.

Day.	May.		June	
	Feet	Sec.-ft.	Feet.	Sec.-ft.
1			3·08	[illegible]
2			3·40	[illegible]
3			4·15	[illegible]
4			3·82	[illegible]
5			3·20	[illegible]
6			2·98	[illegible]
7			2·65	[illegible]
8			2·50	[illegible]
9			2·50	[illegible]
10			2·55	[illegible]
11			2·60	[illegible]
12			2·75	[illegible]
13			3·10	[illegible]
14			3·5	[illegible]
15			3·8	[illegible]
16			4·0	[illegible]
17			4·17	[illegible]
18			4·15	[illegible]
19			3·75	[illegible]
20			3·35	[illegible]
21			3·05	[illegible]
22			2·72	[illegible]
23	3·0	2,090	2·55	[illegible]
24	3·0	2,090	2·5	[illegible]
25	3·1	2,240	2·65	[illegible]
26	2·87	1,900	2·95	[illegible]
27	2·67	1,630	2·97	[illegible]
28	2·55	1,480	2·95	[illegible]
29	2·42	1,330	3·07	[illegible]
30	2·4	1,310	3·2	[illegible]
31	2·6	1,540	...	

DAILY GAUGE HEIGHT AND DISCHARGE of Kaslo Creek near Kaslo, B.C., for 1914.

Day.	July.		August		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	3.32	2,580	2.0	880	1.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	3.45	2,790	1.92	810	1.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	3.57	2,990	1.92	810	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	3.6	3,040	1.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	3.3	2,550	1.65	585	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	3.25	2,470	1.72	630	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	3.18	2,320	1.8	700	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	3.1	2,24	1.57	5 0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	3.05	2,16	1.47	45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	3.05	2,16	1.42	44	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	3.05	2,16	1.42	44	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	1.47	45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	2,30	1.55	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	3.1	2,22	1.47	45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	3.05	2,16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	2.6	1,63	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	1,42	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	2.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	2.3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]			[illegible]	[illegible]

MONTHLY DISCHARGE of Kaslo Creek near Kaslo, for 1914.

[illegible]

Month.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

KOOSKANAX CREEK NEAR NAKUSP (3022).

Location.—At bridge over canyon, 1 mile from Nakusp and about 1 mile from the mouth. Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—The precipitation at Nakusp, from December, 1913, to November 30, 1914, was 26.8 inches. The summers are hot and fairly dry. The winters are mild. Occasionally, for a day or two, the temperature will go below zero, but the mean temperature of winter months is probably 25° to 35°F. Frazil ice may be expected for a few days at a time only.

Gauge.—A chain is located at the bridge, and read by Mr. L. H. Rawlings twice a week.

Channel.—The river is confined between perpendicular walls, 38 feet apart at the gauging and measuring section. The control is a sand and gravel bar, and seems faily permanent.

Discharge Measurements.—Nine measurements were made in 1914.

Accuracy.—These results should be within 20 per cent. The gauge readings only being twice a week almost prohibit giving an accuracy during May, June, and July.

General.—Kooskanax creek is a stream about 25 miles long, rising in the divide between Trout lake and Upper Arrow lake, southeast of Nakusp, and discharging into Upper Arrow lake near Nakusp. The drainage area is about 125 square miles.

There is a power site in the canyon about a mile from the mouth, where, at some future date, the town of Nakusp might obtain a suitable development for lighting purposes and small industries. The canyon is about 100 feet long, 30 feet wide, and about 40 to 50 feet deep. The low-water flow is seldom less than 100 c.f.s. Mr. C. E. Webb made a preliminary report in March, 1914, on the power possibilities of this creek near Nakusp. His report is included in part 2 of this report.

DISCHARGE MEASUREMENTS of Kooskanax River near Nakusp, B.C., for 1914.

Date	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity	Gauge Height	Di
			Feet	Sq. ft.	Ft. per sec	Feet.	
Mar 19	C. F. Webb	1048	27	204	0·59	0·7	
May 16	J. A. E. and G. K. B	1672	26	274	5·63	4·2	
June 13	G. K. B	1927	26	273	4·30	3·50	
" 20	G. K. B	1927	26	275	5·40	3·80	
" 28	J. A. E.	1909	27	293	4·73	3·34	
Aug 12	J. A. E.	1909	27	229	1·07	1·1	
Sept 4	J. A. E., C. F. R	1928	28	221	0·62	0·65	
Oct 28	J. A. E.	1909	29	240	1.28	1·15	
Nov 23	J. A. E., O. J. B	1909	28	230	0·95	1·2	

DAILY GAUGE HEIGHT AND DISCHARGE at Kooskanax Creek near Nakusp, for 1914.

Day	March		April		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								

DAILY GAUGE HEIGHT AND DISCHARGE at Kooskanax Creek near Nakusp, for 1914—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	.....	1,470	...	990	....	128	....	680	1·3	355	..	[illegible]
2		1,530	2·5	920	0·7	115		690		345	1·0	[illegible]
3	3·7	1,590	......	820		115		700	..	335		225
4	......	1,570	...	720	..	115	2·1	720		325		215
5	....	1,560	1·9	630	....	115	.....	700	1·2	315		205
6	.....	1,550	.....	560	0·7	115		685		335	0·9	195
7	3·6	1,530	......	500	...	118	2·0	670		365	..	195
8	......	1,500	...	445		120	.....	650	1·4	395		195
9	......	1,470	1·4	395	0·72	123	......	630		395	0·9	195
10	....	1,440	....	365	......	121	......	610	..	395		195
11	3·4	1,410	.....	335	......	119	1·85	597	1·4	395	.....	195
12	..	1,380	1·2	315	...	117	....	590	.....	385	..	195
13		1,350	..	305	0·7	115	....	580	......	375	0·9	195
14		1,320		295	..	111	1·8	575	...	365	.....	195
15	3·2	1,300	......	285	...	107	.....	545	1·3	355		195
16	...	1,300	1·1	275	0·65	102	....	525		370	0·9	[illegible]
17	.....	1,300		261		155		505		380		185
18	...	1,300		248		210	1·6	485	1·4	395		175
19	3·2	1,300	1·0	235		260		470		395		165
20	.....	1,280		225	1·20	315		455		395	0·8	[illegible]
21	.....	1,260		215		355	1·5	440		395		155
22	3·1	1,250		205		395		415	1·4	395		155
23	.....	1,250	0·9	195	1·50	440		395		365		[illegible]
24	....	1,250		195		485		375		335		155
25	...	1,250		195		530	1·3	355	1·2	315		155
26	3·1	1,250	0·9	195		575		340		295		155
27	...	1,230	...	185	1·90	620		330		275	0·8	155
28	...	1,210		175		630	1·2	315		255		140
29	3·0	1,200		165		650		325	1·0	235	....	130
30	.....	1,130	0·8	155	2·00	670		335		235	0·7	115
31	...	1,060	..	141		.		345		..	..	115

MONTHLY DISCHARGE of Kooskanox Creek near Nakusp, B.C., for 1914.

(Drainage area, 125 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	[illegible]
April	1,080	115	530	4·25	4·74	[illegible]
May	1,880	920	1,330	10·6	12·2	[illegible]
June	1,820	1,410	1,600	12·8	14·3	[illegible]
July	1,590	1,060	1,350	10·8	12·4	[illegible]
August	990	141	362	2·90	3·34	[illegible]
September	670	102	272	2·18	2·43	[illegible]
October	720	315	517	4·14	4·77	[illegible]
November	395	235	336	2·69	3·00	[illegible]
December	235	115	178	1·42	1·64	[illegible]

Accuracy "D."

KOOTENAY RIVER AT UPPER BONNINGTON FALLS (3075).

Location.—At the head-race of the West Kootenay Power and Light Company's plant No. 2, at Upper Bonnington, 10 miles west of Nelson and about 15 miles from the mouth of the Kootenay, near Castlegar. Nelson district.

Records Available.—October, 1907, to December, 1914, through the courtesy of the West Kootenay Power and Light Company.

Climatic Conditions.—The climatic conditions are similar to those at Nelson (see Kootenay river near Nelson). The warming influence of Kootenay lake keeps the water of the river below the lake at a temperature such that the river never freezes over, and very little, if any, frazil ice and anchor ice is formed.

Gauge.—The elevation of the water each day was determined by means of measuring the distance to the surface of the water from a known point. These readings were taken by the West Kootenay Power and Light Company for their own information. The gauge is located at a point at the upstream end of the head-race, where part of the water is diverted to the turbines, and the remainder flows over the falls, some 200 feet below.

Method of Compilation.—The only metering section on Kootenay river between the lake and the mouth is near Glade, about 6 miles below Upper Bonnington. The only stream of any size entering between these points is Slocan river. The discharge curve for the Kootenay at Bonnington falls, near Nelson, and at Bonnington pool, is obtained by subtracting the discharge of Slocan river from the discharge of the Kootenay river near Glade. For more complete information on the studies carried on regarding the Kootenay between Kootenay lake and the mouth see report in Part 2, called, "Compilation of data on Kootenay river, between Kootenay lake and the mouth."

Accuracy.—As we do not know sufficient regarding the gauge, these data are not guaranteed, but it appears that they agree very well with similar data gathered in 1914 at Bonnington pool and near Nelson.

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1907.

DAY.	October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft
1	192·0	36,200	189·0	18,800	186·9	9,900
2	192·0	36,200	189·0	18,800	186·9	9,900
3	191·9	35,500	189·0	18,800	186·9	9,600
4	191·9	35,500	189·0	18,800	186·8	9,600
5	191·8	34,800	189·0	18,800	186·8	[illegible]
6	191·7	34,200	189·0	18,800	187·5	[illegible]
7	191·5	33,000	188·0	18,300	187·7	13,000
8	191·0	30,000	188·8	17,900	187·6	12,600
9	191·8	28,800	188·7	17,400	187·6	12,600
10	190·5	27,000	188·6	16,900	187·5	12,200
11	190·4	26,400	188·6	16,900	187·5	12,200
12	190·4	26,400	188·6	16,900	187·5	12,200
13	190·4	26,400	188·5	16,400	187·5	12,200
14	190·3	25,800	188·0	14,200	187·5	12,200
15	190·3	25,800	188·0	14,200	187·5	12,200
16	190·3	25,800	187·9	13,800	187·5	12,200
17	190·3	25,800	187·5	12,200	187·5	12,200
18	190·0	24,000	187·3	11,400	187·3	11,400
19	190·0	24,000	187·2	11,000	187·3	11,400
20	189·8	22,900	187·2	11,000	187·3	11,400
21	189·7	22,400	187·2	11,000	187·1	10,600
22	189·7	22,400	187·2	11,000	187·1	[illegible]
23	189·5	21,400	187·1	10,600	187·1	[illegible]
24	189·5	21,400	187·1	10,200	187·0	10,200
25	189·5	21,400	187·0	10,200	187·0	10,200
26	189·4	20,800	187·0	10,200	187·0	[illegible]
27	189·4	20,800	187·0	10,200	186·9	[illegible]
28	189·1	19,300	187·0	10,200	186·9	[illegible]
29	189·1	19,300	187·0	10,200	186·9	[illegible]
30	189·1	19,300	186·9	9,900	187·1	[illegible]
31	189·1	19,300	...	...	187·1	[illegible]

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1907.

(Drainage area, 17,800 square miles.)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	
	Maximum	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area.	Tot in acre-f
October	36,200	19,300	26,200	1·47	1·70	[illegible]
November	18,800	9,900	14,200	0·80	0·89	[illegible]
December	13,000	9,600	11,100	0·62	0·72	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1908.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec -ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec -ft.	Feet.	Sec.-ft.
1	187·0	10,200	186·1	7,500	185·9	7,000	187·4	11,800	193·0	43,200	196·5	73,000
2	166·9	9,900	186·0	7,200	185·9	7,000	187·4	11,800	193·3	45,300	196·7	75,000
3	186·9	9,900	186·0	7,200	185·9	7,000	187·4	11,800	193·5	46,700	196·8	76,000
4	186·8	9,600	186·0	7,200	185·9	7,000	187·4	11,800	193·5	46,700	196·9	77,000
5	186·7	9,300	186·0	7,200	185·9	7,000	187·4	11,800	193·6	47,400	197·0	79,000
6	186·7	9,300	186·0	7,200	185·9	7,000	187·4	11,800	193·8	48,800	197·2	81,000
7	186·6	9,000	186·0	7,200	185·9	7,000	187,4	11,800	194·1	51,200	197·5	84,000
8	186·6	9,000	186·0	7,200	185·9	7,000	187·4	11,800	194·5	54,500	197·8	88,000
9	186·6	9,000	186·0	7,200	185·9	7,000	187·4	11,800	194·9	58,100	198·0	91,000
10	186·6	9,000	186·0	7,200	185·9	7.000	187·4	11,800	195·1	59,900	198·3	94,000
11	186 6	9,000	186·0	7,200	185·9	7,000	187·5	12,200	195·3	61,700	198·5	98,500
12	186 6	9,000	186·0	7,200	185·9	7,000	187·5	12,200	195·5	63,500	198·8	101,000
13	186 6	9,000	186·0	7,200	185 9	7,000	187·6	12,600	195·6	64 400	199·0	104,000
14	186·7	9,300	186·0	7,200	186·0	7,200	187·7	13,000	195·9	67,100	199·2	107,000
15	186·7	9,300	186·0	7,200	186·0	7,200	188·0	14,200	196·0	68,000	199·3	108,000
16	186·5	8,700	186 0	7,200	186 1	7,500	188·3	15,400	196 2	70,000	199·5	110,000
17	186·4	8,400	186·0	7,200	186·2	7,800	188·5	16,400	196·3	71,000	199·7	113,000
18	186·4	8,400	186·0	7,200	186·4	8,400	189·0	18,800	196·4	72,000	199·7	113,000
19	186·5	8,700	186·0	7,200	186·5	8,700	189·4	20,800	196·5	73,000	199·7	113,000
20	186·6	9,000	186·0	7,200	186 6	9.000	190·0	24,000	196·4	72,000	199·7	113,000
21	186·6	9,000	186·0	7,200	186·6	9,000	190·5	27,000	196·4	72,000	199·6	111,000
22	186·6	9,000	186·0	7,200	186·7	9,300	191·0	30,000	196·4	72,000	199·5	110,000
23	186·5	8,700	186·0	7,200	186·8	9,600	191·5	33,000	196·4	72,000	199·3	108,000
24	186·5	8,700	186·0	7,200	186 9	9,900	191·9	33,300	196·4	72,000	199·1	106,000
25	186·4	8,400	186·0	7,200	186·9	9,900	192·2	37,600	196·4	72,000	199·0	104,000
26	186·4	8,400	186·0	7,200	186·9	9,900	192 5	39,700	196·4	72,000	198·9	102,000
27	186·3	8,100	186·0	7,200	187·0	10,200	192 8	41,800	196 4	72,000	198·7	99,500
28	186·2	7,800	186·0	7,200	187·0	10,200	193 0	43,200	196·4	72,000	198·5	96,500
29	186·4	8,400	186·0	7,200	187·1	10,600	193·0	43,200	196·4	72,000	198·4	95,000
30	186·4	8,400	....	.....	187·4	11,800	193·0	43,200	196 4	72,000	198·3	94,000
31	186·2	7,800	..	..	187·4	11,800	....	....	196·5	73,000		..

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1908—*Concluded.*

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec
1	198·1	92,000	195·1	59,900	190·2	25,200	188·5	16,400	187·2	11,000	187·7	13,000
2	198·0	91,000	194·8	57,200	190·1	24,600	188·5	16,400	187·3	11,400	187·9	13,800
3	198·0	91,000	194·5	54,500	190·1	24,600	188·5	18,400	187·3	11,400	187·9	13,800
4	198·0	91,000	194·3	52,800	190·0	24,000	188·4	15,900	187·3	11,400	187·9	13,800
5	197·9	89,500	194·1	51,200	190·0	24,000	188·3	15,400	187·3	11,400	187·9	13,800
6	197·7	86,500	194·0	50,400	190·0	24,000	188·2	15,000	187·3	11,400	187·6	12,600
7	197·5	84,000	193·9	49,600	190·0	24,000	188·1	14,600	187·3	11,400	187·4	11,800
8	197·5	84,000	193·6	47,400	190·0	24,000	188·0	14,200	187·3	11,400	187·3	11,400
9	197·5	84,000	193·5	46,700	189·7	22,400	187·9	13,800	187·2	11,000	187·2	11,000
10	197·5	84,000	193·3	45,300	189·6	21,900	187·8	13,400	187·2	11,000	187·1	10,600
11	197·2	81,000	193·1	43,900	189·6	21,900	187·7	13,000	187·2	11,000	187·0	10,200
12	197·2	81,000	193·0	43,200	189·6	21,900	187·7	13,000	187·2	11,000	187·0	10,200
13	197·2	81,000	192·9	42,500	189·6	21,900	187·7	13,000	187·2	11,000	187·0	10,200
14	197·2	81,000	192·7	41,100	189·6	21,900	187·7	13,000	187·2	11,000	187·0	10,200
15	197·2	81,000	192·5	39,700	189·5	21,400	187·6	12,600	187·0	10,200	187·0	10,200
16	197·2	81,000	192·3	38,300	189·5	21,400	187·6	12,600	187·0	10,200	187·0	10,200
17	197·1	80,000	192·0	35,200	189·5	21,400	187·6	12,600	187·0	10,200	187·0	10,200
18	197·0	79,000	191·8	34,800	189·5	21,400	187·6	12,600	187·0	10,200	186·5	8,700
19	197·0	79,000	191·7	34,200	189·4	20,800	187·6	12,600	187·0	10,200	186·5	8,700
20	196·7	75,000	191·6	33,600	189·3	20,300	187·6	12,600	187·0	10,200	186·5	8,700
21	196·6	74,000	191·5	33,000	189·2	19,800	187·6	12,600	187·1	10,600	186·5	8,700
22	196·5	73,000	191·4	32,400	189·2	19,800	187·6	12,600	187·4	11,800	186·5	8,700
23	196·5	73,000	191·3	31,800	189·1	19,300	187·5	12,200	187·5	12,200	186·4	8,400
24	196·5	73,000	191·2	31,200	189·1	19,300	187·5	12,200	187·5	12,200	186·4	8,400
25	196·3	71,000	191·0	30,000	189·0	18,800	187·5	12,200	187·5	12,200	186·4	8,400
26	196·2	70,000	191·0	30,000	189·0	18,800	187·5	12,200	187·5	12,200	186·4	8,400
27	196·1	69,000	190·9	29,400	188·9	18,300	187·5	12,200	187·5	12,200	186·4	8,400
28	196·0	68,000	190·7	28,200	188·8	17,900	187·4	11,800	187·5	12,200	186·4	8,400
29	195·7	65,300	190·6	27,600	188·7	17,400	187·3	11,400	187·5	12,200	186·4	8,400
30	195·5	63,500	190·5	27,000	188·6	16,900	187·3	11,400	187·5	12,200	186·2	7,800
31	195·3	61,700	190·5	27,000	. . .	. . . . .	187·3	11,400			186·0	[illegible]

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1908.

(Drainage area, 17,800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	[illegible]
January	10,200	7,800	8,880	0·50	0·58	[illegible]
February	7,500	7,200	7,200	0·40	0·43	[illegible]
March	11,800	7,000	8,600	0·48	0·55	[illegible]
April	43,200	11,800	21,700	1·22	1·36	[illegible]
May	73,000	43,200	63,800	3·58	4·13	[illegible]
June	113,000	73,000	94,100	5·29	5·90	[illegible]
July	92,000	61,700	72,100	4·05	4·67	[illegible]
August	59,900	27,000	39,700	2·23	2·57	[illegible]
September	25,200	16,900	21,300	1·21	1·35	[illegible]
October	16,400	11,400	13,300	0·75	0·86	[illegible]
November	12,200	10,200	10,300	0·58	0·65	[illegible]
December	13,800	7,200	10,100	0·57	0·66	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1909.

Day	January.		February.		March.		April.		May.		June.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec. ft	Feet.	Sec.-ft.	Feet.	Sec -ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	186·3	8,100	186·1	7,500	186·2	7,800	186·4	8,400	188·0	14,200	195·0	59,000
2	186·1	7,500	186·1	7,500	186·2	7,800	186·6	9,000	188·0	14,600	195·5	63,500
3	186·0	7,200	186·1	7,500	186·2	7,800	186·7	9,300	188·3	15,400	196·0	68,000
4	186·1	7,500	186·1	7,500	186·2	7,800	186·8	9,600	188·4	15,900	196·5	73,000
5	186·2	7,800	186·1	7,500	186·2	7,800	186·9	9,900	188·5	16,400	197·0	79,000
6	186·1	7,500	186·1	7,500	186·1	7,500	186·9	9,900	188·6	16,900	197·4	83,000
7	186·0	7,200	186·1	7,500	186·1	7,500	187·0	10,200	188·8	17,900	197·7	86,000
8	186·0	7,200	186·1	7,500	186·1	7,500	187·0	10,200	189·0	18,800	198·0	91,000
9	186·0	7,200	186·1	7,500	186·1	7,500	187·0	10,200	189·1	19,300	198·2	93,000
10	186·2	7,800	186·1	7,500	186·1	7,500	187·0	10,200	189·3	20,300	198·4	95,000
11		7,800	186·2	7,800	186·1	7,500	187·0	10,200	189·4	20,800	198·6	98,000
12	Ice	7,800	186·2	7,800	186·1	7,500	187·0	10,200	189·5	21,400	198·6	98,000
13	186·2	7,800	186·2	7,800	186·1	7,500	187·0	10,200	189·6	21,900	198·7	99,000
14	185·9	7,000	186·2	7,800	186·1	7,500	187·0	10,200	189·8	22,900	198·9	102,000
15	185·8	6,800	186·2	7,800	186·1	7,500	187·0	10,200	189·9	23,400	199·0	104,000
16	185·8	6,800	186·2	7,800	186·1	7,500	187·0	10,200	190·0	24,600	199·0	104,000
17	185·8	6,800	186·2	7,800	186·1	7,500	187·1	10,800	190·1	24,600	199·1	106,000
18	185·8	6,800	186·2	7,800	186·2	7,800	187·1	10,600	190·3	25,800	199·2	107,000
19	185·8	6,800	186·2	7,800	186·3	8,100	187·1	10,600	190·5	27,000	199·3	108,000
20	185·9	7,000	186·3	8,100	186·3	8,100	187·2	11,000	190·7	28,200	199·3	108,000
21	185·9	7,000	186·3	8,100	186·2	7,800	187·2	11,000	190·8	28,800	199·4	109,000
22	186·0	7,200	186·3	8,100	186·1	7,500	187·3	11,400	191·1	30,600	199·5	110,000
23	186·0	7,200	186·2	7,800	186·1	7,500	187·4	11,800	191·2	31,200	199·4	109,000
	186·1	7,500	186·2	7,800	186·1	7,500	187·4	11,800	191·5	33,000	199·1	106,000
	186·1	7,500	186·2	7,800	186·1	7,500	187·5	12,200	191·7	34,200	199·0	104,000
26	186·1	7,500	186·2	7,800	186·1	7,500	187·5	12,200	192·1	36,900	198·9	102,000
27	186·1	7,500	186·2	7,800	186·1	7,500	187·6	12,600	192·5	39,700	198·7	99,000
28	186·1	7,500	186·2	7,800	186·1	7,500	187·7	13,000	193·0	43,200	198·5	96,000
29	186·1	7,500			186·2	7,800	187·8	13,400	193·5	46,700	198·3	94,000
30	186·1	7,500			186·2	7,800	187·9	13,800	194·0	50,400	198·2	93,000
31	186·1	7,500			186·3	8,100			194·5	54,500	...	... ..

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1909.

Day.	July.		August.		September.		October		November.		Decembe	
	Gauge Height.	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.
1	198·7	99,000	194·6	55,400	190·1	24,600	188·5	16,400	187·5	12,200	188·7	17,400
2	198·6	98,000	194·6	55,400	190·0	24,000	188·5	16,400	187·5	12,200	188·9	18,300
3	198·5	96,000	194·5	54,500	189·9	23,400	188·5	16,400	187·5	12,200	189·0	18,800
4	194·4	95,000	194·2	52,000	189·9	23,400	188·5	16,400	187·5	12,200	189·0	18,800
5	198·3	94,000	194·0	50,400	189·9	23,400	188·5	16,400	187·6	12,600	189·0	18,800
6	198·3	94,000	193·8	48,800	189·9	23,400	188·5	16,400	187·7	13,000	189·0	18,800
7	198·3	94,000	193·6	47,400	189·9	23,400	188·5	16,400	187·8	13,400	189·0	18,800
8	198·3	94,000	193·5	46,700	189·9	23,400	188·5	16,400	187·9	13,800	189·0	18,800
9	198·3	94,000	193·4	46,000	189·7	22,400	188·5	16,400	187·9	13,800	189·0	18,800
10	198·3	94,000	193·2	44,600	189·5	21,400	188·5	16,400	187·9	13,800	188·7	17,400
11	198·2	93,000	193·0	43,200	189·5	21,400	188·5	16,400	187·9	13,800	188·5	16,400
12	198·1	92,000	192·9	42,500	189·5	21,400	188·5	16,400	187·9	13,800	188·6	16,900
13	198·6	91,000	192·8	41,800	189·5	21,400	188·5	16,400	187·8	13,400	188·6	16,900
14	197·8	88,000	192·6	40,400	189·4	20,800	188·5	16,400	187·7	13,000	188·6	16,900
15	197·6	85,000	192·3	39,700	189·3	20,300	188·3	15,400	187·7	13,000	188·7	17,400
16	197·5	84,000	192·2	37,600	189·1	19,300	188·2	15,000	187·6	12,600	188·8	17,800
17	197·4	83,000	192·0	36,200	189·1	19,300	188·1	14,600	187·6	12,600	188·8	17,800
18	197·2	81,000	191·8	34,800	189·1	19,300	188·0	14,200	187·6	12,600	188·6	[illegible]
19	197·0	79,000	191·7	34,200	189·1	19,300	188·0	14,200	187·7	13,000	188·5	[illegible]
20	196·9	77,000	191·6	33,600	189·1	19,300	188·0	14,200	187·7	13,000	188·2	[illegible]
21	196·7	75,000	191·5	33,000	189·1	19,300	188·0	14,200	187·7	13,000	188·0	[illegible]
22	196·5	73,000	191·4	32,400	188·9	18,300	187·9	13,800	187·6	12,600	188·0	14,200
23	196·2	70,000	191·3	31,800	188·7	17,400	187·8	13,400	187·6	12,600	188·0	14,200
24	196·0	65,000	191·1	30,600	188·5	16,400	187·7	13,000	187·5	12,200	188·0	14,200
25	195·8	66,000	191·0	30,000	188·5	16,400	187·7	13,000	187·5	12,200	187·8	[illegible]
26	195·7	65,300	191·0	30,000	188·5	16,400	187·7	13,000	187·7	13,400	187·6	[illegible]
27	195·5	63,500	190·9	29,400	188·5	16,400	187·7	13,000	188·0	14,200	187·5	12,200
28	195·4	62,600	190·7	28,200	188·5	16,400	187·7	13,000	188·1	14,600	187·2	[illegible]
29	195·2	60,800	190·6	27,600	188·5	16,400	187·7	13,000	188·2	15,000	187·1	[illegible]
30	194·9	58,100	190·5	27,000	188·5	16,400	187·7	13,000	188·3	15,400	187·0	[illegible]
31	194·8	57,200	190·4	26,400	....	....	187·7	13,000	......	......	187·0	[illegible]

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1909

(Drainage area, 17,800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage area.
January	8,100	6,800	7,350	0·41	0·47
February	8,100	7,500	7,740	0·44	0·46
March	8,100	7,500	7,650	0·43	0·50
April	13,800	8,400	10,800	0·61	0·68
May	54,500	14,200	27,100	1·52	1·75
June	110,000	59,000	98,200	5·52	6·16
July	99,000	57,200	81,500	4·58	5·28
August	55,400	26,400	40,200	2·26	2·61
September	24,600	16,400	20,100	1·13	1·26
October	16,400	13,000	14,900	0·84	0·97
November	15,400	12,200	13,200	0·74	0·83
December	18,800	10,200	15,800	0,89	1·03

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1910.

DAY.	January.		February.		March.		April.		May		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	187·5	12,200	186·5	8,700	186·0	7,200	189·5	21,400	195·5	63,500	197·8	88,000
2	187·3	11,400	186·5	8,700	186·0	7,200	189·5	21,400	195·8	66,200	197·8	88,000
3	187·2	11,000	186·5	8,700	186·0	7,200	189·5	21,400	195·8	66,200	197·8	88,000
4	187·0	10,200	186·5	8,700	186·0	7,200	189·5	21,400	195·8	66,200	197·7	86,500
5	186·9	9,900	186·5	8,700	186·0	7,200	189·5	21,400	195·8	66,200	197·6	85,000
6	186·9	9,900	186·4	8,400	186·1	7,800	189·5	21,400	195·8	66,200	197·6	85,000
7	186·8	9,600	186·2	7,800	186·3	8,100	189·6	21,900	195·9	67,100	197·5	84,000
8	186·8	9,600	186·2	7,800	186·4	8,400	189·6	21,900	196·1	69,000	197·4	83,000
9	186·7	9,300	186·2	7,800	186·5	8,700	189·7	22,400	196·3	71,000	197·5	84,000
10	186·7	9,300	186·2	7,800	186·5	8,700	189·9	23,400	196·5	73,000	197·3	82,000
11	186·6	9,000	186·2	7,800	186·5	8,700	190·0	24,000	196·8	76,000	197·1	80,000
12	186·6	9,000	186·3	8,100	186·6	9,000	190·3	25,800	197·0	79,000	197·0	79,000
13	186·6	9,000	186·3	8,100	186·7	9,300	190·4	26,400	197·1	80,000	197·0	79,000
14	186·6	9,000	186·4	8,400	186·8	9,600	190·6	27,600	197·3	82,000	197·0	79,000
15	186·6	9,000	186·4	8,400	186·9	9,900	190·8	28,800	197·4	83,000	197·0	79,000
16	186·5	8,700	186·4	8,400	187·1	10,600	191·0	30,000	197·5	84,000	197·0	79,000
17	186·4	8,400	186·4	8,400	187·3	11,400	191·1	30,600	197·5	84,000	196·9	77,000
18	186·4	8,400	186·4	8,400	187·4	11,800	191·4	32,400	197·5	84,000	196·9	77,000
19	186·5	8,700	186·4	8,400	187·5	12,200	191·5	33,000	197·3	82,000	196·8	76,000
20	186·6	9,000	186·4	8,400	187·5	12,200	191·8	34,900	196·8	76,000	196·8	76,000
21	186·6	9,000	186·4	8,400	187·5	12,200	192·0	36,200	196·2	70,000	196·9	77,000
22	186·6	9,000	186·4	8,400	187·8	13,400	192·4	39,000	196·1	69,000	196·9	77,000
23	186·5	8,700	186·3	8,100	188·1	14,600	192·6	40,400	196·1	69,000	196·8	76,000
24	186·5	8,700	186·0	7,200	188·6	16,900	193·0	43,200	196·1	69,000	196·7	75,000
25	186·5	8,700	185·9	7,000	189·2	19,800	193·8	45,300	196·2	70,000	196·5	73,000
26	186·4	8,400	185·9	7,000	189·5	21,400	193·7	48,100	196·4	72,000	196·4	72,000
27	186·5	8,700	185·9	7,000	189·5	21,400	194·1	51,200	196·5	73,000	196·3	71,000
28	186·5	8,700	185·9	7,000	189·5	21,400	194·5	54,500	196·5	73,000	196·3	71,000
29	186·5	8,700	....	......	189·4	20,800	195·0	59,000	196·5	73,000	196·3	71,000
30	186·5	8,700	..	....	189·5	21,400	195·2	60,800	197·1	80,000	196·2	70,000
31	186·5	8,700	....	....	189·5	21,400	..	....	197·5	84,000		

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1910.

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height	Dis-charge	Gauge Height.	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	196·0	68,000	192·6	40,400	189·4	20,800	188·1	14,600	188·8	17,900	189·0	18,800
2	196·0	68,000	192·4	39,000	189·4	20,800	188·1	14,600	188·7	17,400	188·7	17,400
3	196·0	68,000	192·3	38,300	189·3	20,300	188·1	14,600	188·7	17,400	188·5	16,400
4	195·9	67,100	192·1	36,900	189·1	19,300	188·1	14,600	188·7	17,400	188·5	16,400
5	195·7	65,300	192·0	35,200	189·0	18,800	188·2	15,000	188·7	17,400	188·5	16,400
6	195·5	63,500	191·9	35,500	188·9	18,300	188·2	15,000	188·7	17,400	188·4	15,900
7	195·4	62,600	191·8	34,800	188·8	17,900	188·3	15,400	188·7	17,400	188·4	15,900
8	195·4	62,600	191·6	33,600	188·6	16,900	188·3	15,400	188·7	17,400	188·3	15,400
9	195·3	61,700	191·5	33,000	188·6	16,900	188·5	16,400	188·8	17,900	188·1	14,600
10	195·2	60,800	191·5	33,000	188·5	16,400	188·6	16,900	188·8	17,900	188·1	14,600
11	195·1	59,900	191·4	32,400	188·5	16,400	188·6	16,900	188·9	18,300	188·1	14,600
12	195·0	59,000	191·3	31,800	188·4	15,900	188·7	17,400	188·9	18,300	188·5	16,400
13	194·9	58,100	191·2	31,200	188·4	15,900	188·7	17,400	188·9	18,300	188·4	15,900
14	194·8	57,200	191·2	31,200	188·4	15,900	188·7	17,400	188·9	18,300	188·3	15,400
15	194·6	55,400	191·1	30,600	188·3	15,400	188·8	17,900	189·0	18,800	188·2	15,000
16	194·5	54,500	191·1	30,600	188·3	15,400	188·9	18,300	189·0	18,800	188·1	14,600
17	194·4	53,600	191·0	30,000	188·2	15,000	188·9	18,300	189·1	19,300	188·0	14,200
18	194·3	52,800	190·9	29,400	188·1	14,600	188·8	17,900	189·2	19,800	188·0	14,200
19	194·2	52,000	190·7	28,200	188·0	14,200	188·9	18,200	189·2	19,800	188·0	14,200
20	194·1	51,200	190·6	27,600	188·0	14,200	189·0	18,800	189·1	19,300	188·0	14,200
21	194·1	51,200	190·5	27,000	188·0	14,200	189·1	19,300	189·0	18,800	187·8	13,400
22	194·1	51,200	190·4	26,400	188·0	14,200	188·9	18,300	189·0	18,800	187·7	13,000
23	194·0	50,400	190·4	26,400	188·0	14,200	188·9	18,300	189·1	19,300	187·6	12,600
24	193·9	49,600	190·2	25,200	188·1	14,600	188·9	18,300	189·1	19,300	187·6	12,600
25	193·6	47,400	190·1	24,600	188·2	15,000	188·9	18,300	189·2	19,800	187·5	12,200
26	193·5	46,700	190·0	24,000	188·2	15,000	188·9	18,300	189·2	19,800	187·5	12,200
27	193·5	46,700	189·9	23,400	188·1	14,600	188·9	18,300	189·2	19,800	187·5	12,200
28	193·3	45,300	189·8	22,900	188·1	14,600	188·9	18,300	189·2	19,800	187·5	12,200
29	193·0	43,200	189·7	22,400	188·1	14,600	188·9	18,300	189·2	19,800	187·5	12,200
30	192·9	42,500	189·6	21,900	188·1	14,600	188·9	18,300	189·2	19,800	187·5	12,200
31	192·7	41,100	189·5	21,400			188·9	18,300			187·5	12,200

MONTHLY DISCHARGE of Kootenay River near Bonningtor Falls, for 1910

(Drainage area, 17,800 square miles.)

Month.	Discharge in Second-Feet.				Run Off	
	Maximum	Minimum	Mean.	Per square mile.	Depth in inches on Drainage [illegible]	[illegible]
January..	12,200	8,400	9,240	0·52	0·60	
February	8,700	7,000	8,070	0·45	0·47	
March...	21,400	7,200	12,500	0·70	0·81	
April	60,800	21,400	32,900	1·[illegible]	2·06	
May.....	84,000	63,500	73,800	4·15	4·78	
June....	88,000	70,000	78,900	4·43	4·94	
July	68,000	41,100	55,400	3·11	3·58	
August	40,400	21,400	30,000	1·[illegible]	1·94	
September	20,800	14,200	16,200	0·91	1·02	
October..	19,300	14,600	17,200	0·97	1·12	
November..	19,800	17,400	18,600	1·04	1·16	
December	18,800	12,200	14,400	0·81	0·93	

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1911.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet	Sec.-ft.
1	187·4	11,800	186·1	7,500	185·5	6,300	188·0	14,200	191·3	31,800	194·7	56,300
2	187·3	11,400	186·1	7,500	185·5	6,300	188·0	14,200	191·4	32,400	194·9	58,100
3	187·1	10,600	186·1	7,500	185·5	6,300	188·1	14,600	191·6	33,600	195·2	60,800
4	187·0	10,200	186·1	7,500	185·5	6,300	188·2	15,000	191·8	34,800	195·4	62,600
5	186·9	9,900	186·1	7,500	185·5	6,300	188·2	15,000	192·0	36,200	195·6	64,400
6	186·8	9,600	186·1	7,500	185·5	6,300	188·3	15,400	192·4	39,000	195·8	66,200
7	186·8	9,600	186·1	7,500	185·5	6,300	188·3	15,400	192·7	41,100	196·0	68,000
8	186·7	9,300	186·1	7,500	185·5	6,300	188·4	15,900	193·0	43,200	196·2	70,000
9	186·7	9,300	186·1	7,500	185·6	6,400	188·4	15,900	193·3	45,300	196·3	71,000
10	186·7	9,300	186·1	7,500	185·6	6,400	188·4	15,900	193·5	46,700	196·3	75,000
11	186·6	9,000	186·2	7,800	185·7	6,600	188·4	15,900	193·6	47,400	196·6	74,000
12	186·6	9,000	186·2	7,800	185·8	6,800	188·4	15,900	193·7	48,100	196·9	77,000
13	186·6	9,000	186·2	7,800	185·8	6,800	188·5	16,400	193·8	48,800	197·1	80,000
14	186·4	8,400	186·2	7,800	185·8	6,800	188·5	16,400	193·8	48,800	197·4	83,000
15	186·3	8,100	186·2	7,800	185·9	7,000	188·5	16,400	193·9	49,600	197·6	85,000
16	186·1	7,500	186·2	7,800	185·9	7,000	188·5	16,400	194·0	50,400	197·9	89,500
17	186·0	7,200	186·2	7,800	186·0	7,200	188·5	16,400	194·0	50,400	198·1	92,000
18	185·9	7,000	186·3	8,100	186·0	7,200	188·5	16,400	194·1	51,200	198·3	94,000
19	185·9	7,000	186·3	8,100	186·1	7,500	188·5	16,400	194·3	52,800	198·5	96,500
20	186·0	7,200	186·3	8,100	186·3	8,100	188·5	16,400	194·5	54,500	198·7	99,500
21	186·1	7,500	186·3	8,100	186·4	8,400	188·6	16,900	194·6	55,400	198·8	101,000
22	186·3	8,100	186·2	7,800	186·5	8,700	188·7	17,400	194·7	56,300	199·0	104,000
23	186·2	7,800	185·8	6,800	186·6	9,000	188·9	18,300	194·7	56,300	199·0	104,000
24	186·2	7,800	185·7	6,600	186·7	9,300	189·0	18,800	194·6	55,400	199·0	104,000
25	186·2	7,800	185·7	6,600	186·8	9,600	189·5	21,400	194·6	55,400	199·0	104,000
26	186·4	8,400	185·7	6,600	187·0	10,200	189·8	22,900	194·5	54,500	199·0	104,000
27	186·4	8,400	185·7	6,600	187·2	11,000	190·2	25,200	194·5	54,500	199·0	104,000
28	186·3	8,100	185·6	6,400	187·4	11,800	190·5	27,000	194·5	54,500	199·0	104,000
29	186·4	8,400	......		187·6	12,600	190·9	29,400	194·5	54,500	199·0	104,000
30	186·4	8,400	......		187·7	13,000	191·2	31,200	194·5	54,500	199·0	104,000
31	186·2	7,800			187·9	13,800			194·5	54,500		......

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1911.—*Con.*

Day	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	198·9	102,000	194·3	52,800	190·5	27,000	188·7	17,400	187·2	11,000	187·0	10,200
2	198·8	101,000	194·2	52,200	190·4	26,400	188·7	17,400	187·1	10,800	186·9	9,900
3	198·7	99,500	194·0	50,400	190·4	26,400	188·6	16,900	187·1	10,600	186·7	9,300
4	198·5	96,500	193·7	48,100	190·4	26,400	188·5	16,400	187·0	10,200	186·6	9,000
5	198·4	95,000	193·6	47,400	190·4	26,400	188·5	16,400	187·0	10,200	186·5	8,700
6	198·2	93,000	193·5	46,700	190·3	25,800	188·5	16,400	187·0	10,200	186·5	8,700
7	198·0	91,000	193·4	46,000	190·2	25,200	188·4	15,900	187·0	10,200	186·5	8,700
8	197·8	88,000	193·3	45,300	190·2	25,200	188·3	15,400	187·0	10,200	186·4	8,400
9	197·7	86,000	193·1	43,900	190·1	24,600	188·3	15,400	187·0	10,200	186·4	8,400
10	197 5	84,000	193·0	43,200	190·0	24,000	188·2	15,000	186·9	9,900	186·4	8,400
11	197·3	82,000	193·0	43,200	189·9	23,400	188·2	15,000	186·9	9,900	186·3	8,100
12	197·2	81,000	193·0	43,200	189·9	23,400	188·2	15,000	186·8	9,600	186·3	8,100
13	197·1	80,000	192·8	41,800	189·8	22,900	188·2	15,000	186·7	9,300	186·3	8,100
14	197·0	79,000	192·7	41,100	189·7	22,400	188·2	15,000	186·5	8,700	186·3	8,100
15	197·0	79,000	192·5	39,700	189·7	22,400	188·0	14,200	186·4	8,400	186·3	8,100
16	196·9	77,000	192·4	39,000	189·6	21,900	187·9	13,800	186·4	8,400	186·3	8,100
17	196·7	75,000	192·2	37,600	189·6	21,900	187·8	13,400	186·4	8,400	186·3	8,100
18	196·6	74,000	192·1	36,900	183·5	21,400	187·8	13,400	186·4	8,400	186·3	8,100
19	196·5	73,000	191·9	35,500	189·5	21,400	187·7	13,000	186·5	8,700	186·3	8,100
20	196·3	71,000	191·7	34,200	189·4	20,800	187·7	13,000	186·5	8,700	186·2	7,800
21	196·1	69,000	191·6	33,600	189·4	20,800	187·6	12,600	186·5	8,700	186·2	7,800
22	195·9	67,100	191·5	33,000	189·3	20,300	187·6	12,600	186·6	9,000	186·1	7,500
23	195·7	65,300	191·4	32,400	189·3	20,300	187·6	12,600	186·7	9,300	186·1	7,500
24	195·6	64,400	191·3	31,800	189·2	19,800	187·5	12,200	186·7	9,300	186·1	7,500
25	195·5	63,500	191·2	31,200	189·2	19,800	187·5	12,200	186·8	9,600	186·0	7,200
26	195·3	61,700	191·1	30,600	189·0	18,800	187·5	12,200	186·9	9,900	186·0	7,200
27	195·2	60,800	190·9	29,400	188·9	18,300	187·5	12,200	187·0	10,200	186·0	7,200
28	195·0	59,000	190·8	28,800	188·9	18,300	187·5	12,200	187·0	10,200	186·0	7,200
29	194·9	58,100	190·7	28,200	188·8	17,900	187·4	11,800	187·0	10,200	186 0	7,200
30	194·7	56,300	190·6	27,600	188·8	17,900	187·3	11,400	187·0	10,200	186·0	7,200
31	194·5	54,500	190·5	27,000	.....	....	187·2	11,000		....	185·8	6,800

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1911.

(Drainage area, 17,800 square miles.)

Month.	Discharge in Second-Feet.				Run-Off	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	[illegible]
January	11,800	7,000	8,670	0·49	0·56	[illegible]
February	8,100	6,400	7,480	0·42	0·44	[illegible]
March	13,800	6,300	8,120	0·46	0·53	[illegible]
April	31,200	14,200	18,100	1·01	1·13	[illegible]
May	56,300	31,800	48,100	2·70	3·11	[illegible]
June	104,000	56.300	85,300	4·78	5·33	[illegible]
July	102,000	54,500	77,000	4·32	4·98	[illegible]
August	52,800	27,000	38,800	2·18	2·51	[illegible]
September	27,000	17,900	22,400	1·26	1·41	[illegible]
October	17,400	11,000	14,100	0·79	0·91	[illegible]
November	11,000	8,400	9,610	0·54	0·60	[illegible]
December	10,200	6,800	8,090	0·45	0·52	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1912.

Day.	January.		February.		March.		April.		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec. ft	Feet	Sec.-ft	Feet.	Sec.-ft	Feet	Sec. ft	Feet	Sec. ft	Feet	Sec. ft
1	185·8	6,800	185·0	5,800	185·4	6,200	185·2	6,000	189·8	22,900	195·0	59,000
2	185·8	6,800	185·0	5,800	185·3	6,100	185·2	6,000	189·9	23,400	194·9	58,100
3	185·8	6,800	185·0	5,800	185·3	6,100	185·5	6,300	190·0	24,000	194·9	58,100
4	185·8	6,800	185·2	6,000	185·3	6,100	185·5	6,300	190·0	24,000	195·0	59,000
5	185·8	6,800	185·3	6,100	185·1	5,900	185·6	6,400	190·0	24,000	194·8	57,200
6	185·8	6,800	185·1	5,900	185·0	5,800	185·9	7,000	190·1	24,600	194·8	57,200
7	185·8	6,800	185·1	5,900	185·2	6,000	186·1	7,500	190·1	24,600	194·8	57,200
8	186·0	7,200	185·1	5,900	185·0	5,800	186·1	7,500	190·2	25,200	194·7	56,300
9	184·9	5,700	185·1	5,900	185·0	5,800	186·5	8,700	190·5	27,000	194·7	56,300
10	185·0	5,800	185·1	5,900	185·0	5,800	186·5	8,700	190·7	28,200	194·7	56,300
11	185·0	5,800	185·3	6,100	185·0	5,800	186·9	8,900	192·0	30,000	194·5	54,500
12	185·0	5,800	185·3	6,100	185·0	5,800	187·1	10,600	191·3	31,800	194·5	54,500
13	185·0	5,800	185·0	5,800	185·0	5,800	187·1	10,600	191·5	33,000	194·7	56,300
14	185·0	5,800	185·0	5,800	185·0	5,800	187·6	12,600	193·0	36,200	194·8	57,200
15	185·0	5,800	185·0	5,800	185·0	5,800	187·9	13,800	192·3	38,300	194·9	56,100
16	185·0	5,800	184·9	5,700	185·0	5,800	188·0	14,200	192·6	40,400	195·0	59,000
17	185·0	5,800	185·1	5,900	185·0	5,800	188·2	15,000	193·0	43,200	195·0	59,000
18	185·0	5,800	184·9	5,700	185·0	5,800	188·4	15,900	193·3	45,300	195·1	59,000
19	185·0	5,800	184·9	5,700	184·9	5,700	188·7	17,400	193·5	46,700	195·1	59,900
20	185·0	5,800	184·9	5,700	185·0	5,800	189·0	18,300	193·7	48,100	195·2	60,800
21	185·0	5,800	185·0	5,800	185·0	5,800	189·1	19,300	194·0	50,400	195·2	60,800
22	185·0	5,800	185·5	6,300	184·9	5,700	189·2	19,800	194·2	52,000	175·2	60,800
23	185·0	5,800	185·5	6,300	185·0	5,800	189·3	20,300	194·4	5 ,600	195·3	61,700
24	185·0	5,800	185·4	6,200	184·9	5,700	189·4	20,800	194·5	54,500	195·4	62,600
25	185·0	5,800	185·0	5,800	185·0	5,800	189·4	20,800	194·6	55,400	195·5	63,500
26	185·0	5,800	184·9	5,700	184·8	5,600	189·4	20,800	194·7	56,300	195·5	63,500
27	185·0	5,800	184·9	5,700	184·8	5,600	189·6	21,900	194·7	56,300	195·5	63,500
28	185·0	5,800	184·9	5,700	184·9	5,700	189·6	21,900	194·8	57,200	195·5	63,500
29	185·0	5,800	184·9	5,700	184·9	5,700	189·7	22,400	195·0	59,000	195·4	62,600
30	185·0	5,800	....	....	184·9	5,700	189·7	22,400	195·0	59,000	195·0	59,000
31	185·0	5,800	....	....	184·9	5,700			195·1	59,900		

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1912.—*Concluded.*

DAY	July		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec. ft	Feet	Sec. ft	Feet	Sec. ft	Feet	Sec. ft	Feet	Sec. ft	Feet	Sec. ft
1	195·0	59,000	192·9	42,500	190·4	26,400	188·5	16,400	187·6	12,600	187·5	[illegible]
2	195·0	59,000	192·8	41,800	190·3	25,800	188·5	16,400	187·5	12,200	[illegible]	[illegible]
3	195·0	59,000	192·7	41,100	190·2	25,200	188·4	15,800	187·4	11,800	[illegible]	[illegible]
4	194·5	54,600	192·6	40,400	190·1	24,600	188·2	15,000	175·7	11,400	187·3	[illegible]
5	194·5	54,500	192·5	39,700	190·0	24,000	188·1	14,600	187·3	11,400	187·2	[illegible]
6	194·4	53,600	192·4	39,000	190·0	24,000	188·1	14,600	187·3	11,400	187·1	[illegible]
7	194·3	62,800	192·4	39,000	190·0	24,000	188·1	14,600	187·3	11,400	187·2	[illegible]
8	194·0	50,400	192·2	37,600	190·0	24,000	188·0	14,200	187·3	11,400	187·2	[illegible]
9	194·0	50,400	192·1	36,900	190·0	24,000	188·0	14,200	187·4	11,800	187·1	[illegible]
10	194·0	50,400	192·0	35,200	190·0	24,000	188·0	14,200	187·5	12,200	187·1	[illegible]
11	194·0	50,400	191·9	35,500	189·7	22,400	188·0	14,200	187·5	12,200	187·1	[illegible]
12	193·8	48,800	191·9	35,500	189·8	22,900	187·9	13,800	187·5	12,200	187·1	[illegible]
13	193·8	48,800	191·9	35,500	189·7	22,400	187·9	13,800	187·5	12,200	187·0	[illegible]
14	193·9	49,600	191·6	33,600	189·8	22,900	187·9	13,800	187·6	12,600	187·0	[illegible]
15	193·9	49,600	191·6	33,600	189·8	22,900	187·9	13,800	187·7	13,000	187·0	[illegible]
16	193·9	49,600	191·5	33,000	189·7	22,400	187·7	13,000	187·8	13,400	186·9	[illegible]
17	193·9	49,600	191·4	32,400	189·6	21,900	187·7	13,000	188·0	14,200	186·9	[illegible]
18	193·9	49,600	191·3	31,800	189·5	21,400	187·7	13,000	188·0	14,200	186·8	[illegible]
19	193·7	48,100	191·1	30,600	189·3	20,300	187·7	13,000	188·0	14,200	186·8	[illegible]
20	193·7	48,100	191·0	30,000	189·3	20,300	187·7	13,000	188·0	14,200	186·7	[illegible]
21	193·7	48,100	191·0	30,000	189·3	20,300	187·6	13,400	187·9	13,800	186·7	[illegible]
22	193·5	46,700	191·0	30,000	189·1	19,300	187·8	13,400	187·9	13,800	186·7	[illegible]
23	193·6	46,700	191·0	30,000	189·0	18,800	187·7	13,000	188·0	14,200	186·9	[illegible]
24	193·5	46,700	191·0	30,000	189·0	18,800	187·7	13,000	188·0	14,200	186·8	[illegible]
25	193·4	46,000	191·0	36,000	189·0	18,800	187·8	13,400	188·9	13,800	186·8	[illegible]
26	193·1	43,900	190·8	28,000	189·0	18,800	187·7	13,000	188·9	13,800	186·7	[illegible]
27	193·0	43,200	190·6	27,600	188·8	17,900	187·7	13,000	188·8	13,400	186·6	[illegible]
28	192·9	42,500	190·6	27,600	188·8	17,900	187·7	13,000	188·8	13,400	186·7	[illegible]
29	193·0	43,200	190·6	27,600	189·8	17,900	187·7	13,000	188·7	13,000	186·7	[illegible]
30	192·9	42,500	190·6	27,600	188·6	16,900	187·7	13,000	188·5	12,200	186·3	[illegible]
31	192·9	42,500	190·6	27,600	......	...	187·7	13,000	.....	....	186·1	[illegible]

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1912

(Drainage area, 17,800 square miles.)

MONTH	DISCHARGE IN SECOND FEET.				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	[illegible]
January	7,200	5,700	6,070	0·34	0·39	[illegible]
February	6,300	5,700	5,880	0·33	0·36	[illegible]
March	6,200	5,600	5,820	0·33	0·38	[illegible]
April	22,400	6,000	14,000	0·79	0·88	[illegible]
May	59,900	22,900	40,500	2·27	2·62	[illegible]
June	63,500	54,500	59,200	3·32	3·70	[illegible]
July	59,000	42,500	49,300	2·77	3·19	[illegible]
August	42,500	27,600	33,600	1·88	2·17	[illegible]
September	26,400	16,900	21,700	1·22	1·36	[illegible]
October	16,400	13,000	13,800	0·78	0·90	[illegible]
November	14,200	11,400	12,800	0·71	0·79	[illegible]
December	12,200	7,500	10,100	0·57	0·66	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River at Bonnington Falls, for 1913.

DAY	January.		February		March.		April.		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft.	Feet.	Sec.-ft	Feet	Sec.-ft
1	186·3	8,100	185·6	6,400	185·5	6,300	186·1	7,500	191·5	33,000	197·5	84,000
2	186·3	8,100	185·9	7,000	185·8	6,800	186·1	7,500	191·5	33,000	197·9	89,500
3	186·3	8,100	185·9	7,000	185·4	6,200	186·1	7,500	191·7	34,200	198·5	96,500
4	186·6	9,000	185·8	6,800	185·5	6,300	186·1	7,500	191·6	33,600	199·0	104,000
5	186·5	8,700	185·7	6,600	185·5	6,300	185·9	7,000	191·5	33,000	199·2	107,000
6	186·4	8,400	185·6	6,400	185·5	6,300	186·2	7,800	191·5	33,000	199·4	109,000
7	186·3	8,100	185·7	6,600	185·5	6,300	186·0	7,200	191·4	32,400	199·8	114,000
8	186·2	7,800	185·6	6,400	185·4	6,200	186·0	7,200	191·4	32,400	200·1	119,000
9	186·2	7,800	185·8	6,800	185·6	6,400	186·2	7,800	191·5	33,000	200·5	125,000
10	186·2	7,800	185·7	6,600	185·6	6,400	186·2	7,800	191·7	34,200	200·6	126,000
11	186·2	7,800	185·6	6,400	185·6	6,400	186·3	8,100	192·0	36,200	200·7	128,000
12	186·3	8,100	185·6	6,400	185·6	6,400	186·4	8,400	192·3	38,300	200·8	130,000
13	186·2	7,800	185·5	6,300	185·6	6,400	186·8	9,600	192·3	38,300	200·7	128,000
14	186·0	7,200	185·3	6,100	185·6	6,400	187·0	10,200	192·6	40,400	200·8	130,000
15	186·0	7,200	185·3	6,100	185·7	6,600	187·2	11,000	192·7	41,100	201·3	137,000
16	186·0	7,200	185·6	6,400	185·7	6,600	187·6	12,600	192·8	41,800	201·0	132,000
17	186·0	7,200	185·6	6,400	185·6	6,400	187·9	13,800	193·0	43,200	200·0	118,000
18	185·8	6,800	185·6	6,400	185·8	6,800	188·3	15,400	193·2	44,600	200·4	124,000
19	186·0	7,200	185·6	6,400	185·1	5,900	188·7	17,400	193·3	45,300	200·3	122,000
20	185·7	6,600	185·7	6,600	185·8	6,800	189·2	19,800	193·4	46,000	200·2	120,000
21	185·8	6,800	185·8	6,800	185·8	6,800	189·5	21,400	193·3	45,300	200·1	119,000
22	185·8	6,800	185·5	6,300	185·7	6,600	189·8	22,900	193·4	46,000	200·0	118,000
23	185·7	6,600	185·8	6,800	186·0	7,200	190·0	24,000	193·5	46,700	199·7	113,000
24	185·8	6,800	185·6	6,400	185·8	6,800	189·4	20,800	193·8	48,800	199·3	108,000
25	185·8	6,800	185·6	6,400	185·9	7,000	190·6	27,600	194·2	52,000	199·4	109,000
26	185·8	6,800	185·6	6,400	186·0	7,200	190·8	28,800	194·4	53,600	199·2	107,000
27	185·8	6,800	185·5	6,300	185·8	6,800	191·2	31,200	194·9	58,100	199·1	106,000
28	186·3	8,100	185·4	6,200	185·9	7,000	191·3	31,800	195·5	63,500	198·8	101,000
29	186·0	7,200			185·9	7,000	191·4	32,400	196·0	68,000	198·7	99,500
30	186·0	7,200			186·0	7,200	191·4	32,400	196·5	73,000	198·5	96,500
31	186·0	7,200			186·0	7,200	.	. .	197·1	80,000		

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River at Bonnington Falls, for 1913.

Day	July		August		September.		October		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft
1	198·3	94,000	194·0	50,400	191·2	31,200	189·3	20,300	188·0	14,200	187·7	13,0
2	198·2	93,000	193·8	48,800	191·1	30,600	189·2	19,800	188·2	15,000	187·7	13,0
3	198·1	92,000	193·7	48,100	190·9	29,400	189·2	19,800	188·0	14,200	187·7	13,0
4	197·9	89,500	193·3	45,400	190·9	29,400	189·1	19,300	188·0	14,200	187·7	13,0
5	197·7	86,500	193·3	45,300	191·0	30,000	189·1	19,300	188·0	14,200	187·5	12
6	197·6	85,000	193·3	45,300	191·0	30,000	189·2	19,800	187·8	13,400	187·6	12,
7	197·4	83,000	193·0	43,200	191·0	30,000	189·2	19,800	187·7	13,000	187·6	12,
8	197·4	83,000	193·0	43,200	191·0	30,000	189·0	18,800	187·7	13,000	187·3	11,4
9	197·2	81,000	192·8	41,800	191·0	30,000	188·9	18,300	187·8	13,400	187·4	11,8
10	197·0	79,000	193·0	43,200	191·0	30,000	188·8	17,900	187·8	13,400	187·4	11,8
11	196·8	76,000	192·8	41,800	191·0	30,000	188·9	18,300	188·0	14,200	187·2	11,
12	196·9	77,000	192·7	41,100	190·8	28,800	188·9	18,300	187·7	13,000	187·2	11,
13	196·8	76,000	192·8	41,800	190·8	28,800	188·8	17,900	187·7	13,000	187·2	11,
14	196·5	73,000	192·7	41,100	190·7	28,200	188·7	17,400	187·7	13,000	187·3	11,
15	196·3	71,000	192·5	39,700	190·6	27,600	188·8	17,900	187·6	12,600	186·8	9,
16	196·2	70,000	192·3	38,300	190·6	27,600	188·7	17,400	187·8	13,400	186·8	9,
17	196·0	68,000	192·3	38,300	190·5	27,000	188·7	17,400	187·8	13,400	186·7	9,
18	195·7	65,300	192·2	37,600	190·3	25,800	188·7	17,400	187·8	13,400	186·7	9,
19	195·6	64,400	192·0	36,200	190·0	24,000	188·8	17,900	187·2	11,000	186·6	9,
20	195·4	62,600	191·9	35,500	190·0	24,000	188·7	17,400	187·8	13,400	186·5	8,7
21	195·1	59,900	191·8	34,800	190·2	25,200	188·5	16,400	187·8	13,400	186·5	8,
22	195·0	59,000	191·6	33,600	190·2	25,200	188·6	16,900	187·8	13,400	186·4	8,4
23	195·0	59,000	191·6	33,600	190·0	24,000	188·3	15,400	187·8	13,400	186·3	8,
24	194·9	58,100	191·5	33,000	190·0	24,000	188·4	15,900	187·8	13,400	186·3	8,
25	194·6	55,400	191·3	31,800	189·9	23,400	188·3	15,400	187·7	13,000	186·6	9,
26	194·6	55,400	191·5	33,000	189·7	22,400	188·7	17,400	187·7	13,000	186·5	8,7
27	194·4	53,600	191·3	31,800	189·6	21,900	188·4	15,900	187·7	13,000	186·2	7,
28	194·3	52,800	191·3	31,800	189·6	21,900	188·4	15,900	187·7	13,000	186·2	7,
29	194·2	52,000	191·2	31,200	189·4	20,800	188·3	15,400	187·8	13,400	186·3	8,
30	194·2	52,000	191·2	31,200	189·3	20,300	188·3	15,400	187·7	13,000	186·3	8,
31	194·0	50,400	191·2	31,200	....	.....	188·1	14,600	.	..	186·2	7,

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1913

(Drainage Area 17,800 square miles)

Month	Discharge in Second-Feet.				Run-Off.	
	Maximum	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total acre-fe
January	[illegible]	6,600	7,490	0·42	0·48	46
February	[illegible]	6,100	6,490	0·36	0·38	36
March	[illegible]	5,900	6,610	0·37	0·43	40
April.	22,400	7,200	15,800	0·89	0·99	94
May..	[illegible]	32,400	44,600	2·51	2·89	2,74
June..	[illegible]	84,000	114,000	6·40	7·14	6,7
July	94,000	50,400	70,200	3·94	4·54	4,32
August	50,400	31,200	38,800	2·18	2·5	2,39
September	31,200	20,300	26,700	1·50	1·67	1,59
October	20,300	14,600	17,600	0·99	1·14	1,08
November	15,000	11,000	13,300	0·75	0·84	79
December	13,000	7,800	10,200	0·57	0·66	62

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1914.

Day	January		February		March.		April		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft
1	186·2	7,800	186·7	9,300	186·2	7,800	187·4	11,800	192·2	37,600	196·8	76,000
2	186·3	8,100	186·7	9,300	186·1	7,500	187·4	11,800	192·3	38,300	196·8	76,000
3	186·2	7,800	186·6	9,000	186·3	8,100	187·4	11,800	192·4	39,000	196·8	76,000
4	186·3	8,100	186·5	8,700	186·2	7,800	187·4	11,800	192·8	41,800	197·1	80,000
5	186·3	8,100	186·7	9,300	186·7	9,300	187·4	11,800	192·9	42,500	197·3	82,000
6	186·3	8,100	186·5	8,700	186·3	8,100	187·4	11,800	193·2	44,600	197·5	84,000
7	186·7	9,300	186·4	8,400	186·2	7,800	187·5	12,200	193·4	46,000	197·5	84,000
8	187·0	10,200	186·7	9,300	186·3	8,100	187·8	13,400	193·5	46,700	197·6	85,000
9	187·0	10,200	186·5	8,700	186·2	7,800	187·9	13,800	193·7	48,100	197·6	85,000
10	187·2	11,000	186·4	8,400	186·1	7,500	188·1	14,600	193·9	49,600	197·6	85,000
11	187·3	11,400	186·4	8,400	186·1	7,500	188·3	15,400	194·1	51,200	197·4	83,000
12	187·4	11,800	186·3	8,100	186·1	7,500	188·5	16,400	194·2	52,000	197·3	82,000
13	187·3	11,400	186·3	8,100	186·2	7,800	188·6	16,900	194·3	52,800	197·2	81,000
14	187·3	11,400	186·3	8,100	186·2	7,800	189·0	18,800	194·6	55,400	197·2	81,000
15	187·4	11,800	186·4	8,400	186·4	8,400	189·3	20,300	194·8	57,200	197·3	82,000
16	187·7	13,000	186·3	8,100	186·3	8,100	189·6	21,900	195·0	59,000	197·1	80,000
17	187·7	13,000	186·3	8,100	186·3	8,100	189·8	22,900	195·3	61,700	197·2	81,000
18	187·3	11,400	186·2	7,800	186·6	9,000	190·0	24,000	195·6	64,400	197·3	82,000
19	187·3	11,400	186·1	7,500	186·8	9,600	190·4	26,400	195·8	66,200	197·5	84,000
20	187·3	11,400	186·1	7,500	186·8	9,600	190·7	28,200	195·9	67,100	197·7	86,500
21	187·3	11,400	186·3	8,100	186·8	9,600	190·8	28,800	[illegible]·2	70,000	197·8	88,000
22	187·3	11,400	186·2	7,800	186·9	9,900	191·0	30,000	196·3	71,000	197·8	88,000
23	187·0	10,200	186·2	7,800	187·3	11,400	191·3	31,800	196·3	71,000	197·8	88,000
24	187·0	10,200	186·1	7,500	187·3	11,400	191·3	31,800	196·5	73,000	197·7	86,500
25	187·0	10,200	186·2	7,800	187·3	11,400	191·6	33,600	196·7	75,000	197·8	88,000
26	187·0	10,200	186·0	7,200	187·4	11,800	191·8	34,800	196·8	76,000	197·8	88,000
27	187·0	10,200	185·9	7,000	187·4	11,800	191·8	34,800	196·8	76,000	197·6	85,000
28	186·8	9,600	186·3	8,100	187·4	11,800	192·0	36,200	196·7	75,000	197·4	83,000
29	186·8	9,600			187·5	12,200	192·0	36,200	196·9	77,000	197·4	83,000
30	186·8	9,600			187·3	11,400	192·1	36,900	197·0	79,000	197·3	82,000
31	186·8	9,600			187·2	11,000			196·[illegible]	76,000		

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1914—*Concluded.*

DAY.	July.		August	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	197·2	81,000	194·2	52,000
2	197·2	81,000	194·0	50,400
3	197·3	82,000	193·8	48,800
4	197·1	80,000	193·6	47,400
5	197·2	81,000	193·4	46,000
6	197·3	82,000	193·3	45,300
7	197·2	81,000	193·2	44,600
8	197·1	80,000	193·1	43,900
9	197·3	82,000	193·0	43,200
10	197·2	81,000	192·7	41,100
11	197·1	80,000	192·4	39,000
12	197·1	80,000	192·3	38,300
13	197·1	80,000	192·2	37,600
14	197·0	79,000	192·0	36,200
15	197·0	79,000	192·0	36,200
16	196·9	77,000	191·8	34,800
17	196·8	76,000	191·7	34,200
18	196·8	76,000	191·5	33,000
19	196·6	74,000	191·5	33,000
20	196·3	71,000	191·3	31,800
21	196·3	71,000	191·2	31,200
22	196·2	70,000	191·1	30,600
23	196·0	68,000	191·1	90,600
24	195·8	66,200	190·9	23,400
25	195·5	63,500	190·8	28,800
26	195·5	63,500	190·7	28,200
27	195·2	60,800	190·7	28,200
28	194·8	57,[illegible]	190·5	27,000
29	194·8	57,[illegible]	190·3	25,800
30	194·5	54,[illegible]	190·2	25,200
31	194·3	52,800	190·2	25,200

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1914

(Drainage area, 17,800 square miles).

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
January	11,800	7,800	10,300	0·58	0·67	633,000
February	9,300	7,000	8,230	0·46	0·48	457,000
March	12,200	7,500	9,250	0·52	0·60	569,000
April	36,900	11,800	22,400	1·26	1·41	1,330,000
May	79,000	37,600	59,400	3·33	3·84	3,650,000
June	88,000	76,000	23,100	4·66	5·20	4,940,000
July	82,000	52,800	73,000	4·10	4·73	4,490,000
August	52,000	25,200	36,300	2·03	2·34	2,230,000

KOOTENAY RIVER NEAR BONNINGTON POOL (3076).

Location.—At the upper end of Bonnington or Slocan pool, one quarter mile from South Slocan, 12 miles from Nelson, and about 13 miles from the mouth. Nelson district.

Records Available.—June to December, 1914.

Climatic Conditions.—The climatic conditions are similar to those at Nelson (see Kootenay river near Nelson.)

Gauge.—Three vertical staff gauges, 10 feet long, have been used and read by Mr. John Anderson of South Slocan.

Method of Compilation.—Bonnington pool is above the mouth of Slocan river, and the same method of compilation is used as on Kootenay river at Bonnington falls, q.v. For more complete information see report in part 2 called "Compilation of data on Kootenay river between Kootenay lake and the mouth."

Accuracy.—These results should be within 15 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Pool, for 1914.

DAY.	June.	
	Gauge Height.	Discharge.
	Feet.	Sec.-ft.
1	14·5	77,200
2	14·6	77,900
3	14·8	79,500
4	14·9	80,200
5	15·0	81,000
6	15·1	81,700
7	15·3	83,200
8	15·4	84,000
9	15·5	84,700
10	15·5	84,700
11	15·4	84,000
12	15·3	83,200
13	15·1	81,700
14	15·3	83,200
15	15·6	85,400
16	15·8	86,900
17	16·0	88,400
18	16·1	89,200
19	16·3	90,700
20	16·5	92,200
21	16·4	91,400
22	16·3	90,700
23	16·2	89,900
24	16·1	89,200
25	16·0	88,400
26	16·0	88,400
27	15·9	87,700
28	15·8	86,900
29	15·7	86,200
30	15·6	85,400

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Pool, for 1914—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height.	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	15·5	84,700	10·8	51,500	6·04	23,500	5·14	19,000	4·94	18,100	4·94	18,100
2	15·4	84,000	10·6	50,200	5·94	23,000	5·14	19,000	4·95	18,100	4·94	18,100
3	15·3	83,200	10·4	88,800	5·74	22,000	5·14	19,000	4·97	18,200	4·89	17,800
4	15·2	82,500	10·2	47,500	5·64	21,500	5·14	19,000	4·98	18,400	4·84	17,600
5	15·3	83,200	10·0	46,200	5·44	20,500	5·14	19,000	5·54	21,000	4·79	17,400
6	15·5	84,700	9·8	44,900	5·44	20,500	5·14	19,000	5·64	21,500	4·74	17,100
7	15·5	84,700	9·6	43,600	5·44	20,500	5·09	18,800	5·69	21,800	4·74	17,100
8	15·5	84,700	9·4	42,400	5·44	20,500	5·04	18,600	5·74	22,000	4·64	16,600
9	15·4	84,000	9·2	41,200	5·44	20,500	5·04	18,600	5·79	22,200	4·51	16,100
10	15·3	83,200	9·0	40,000	5·44	20,500	4·99	18,400	5·94	23,000	4·49	15,800
11	15·2	82,500	8·8	38,800	5·44	20,500	4·94	18,100	5·94	23,000	4·34	15,100
12	15·1	81,700	8·6	37,600	5·34	20,000	4·89	17,900	5·89	22,800	4·29	14,800
13	15·1	81,700	8·24	35,500	5·34	20,000	4·85	17,600	5·84	22,500	4·14	14,100
14	15·0	81,000	8·14	35,000	5·24	19,500	4·85	17,600	5·84	22,500	4·[illegible]	13,800
15	15·0	81,000	7·94	33,800	5·24	19,500	4·80	17,400	5·89	22,800	4·[illegible]	13,600
16	14·9	80,200	7·94	33,800	5·24	19,500	4·75	17,100	5·79	22,200	3	13,200
17	14·9	80,200	7·84	33,300	5·14	19,000	4·75	17,100	5·79	22,200	3·78	12,400
18	14·8	79,500	7·74	32,700	5·04	18,600	4·84	17,600	5·64	21,500	.....	12,000
19	14·6	77,900	7·54	31,600	5·04	18,600	4·94	18,100	5·59	21,200	.....	12,000
20	14·2	75,000	7·44	31,000	5·04	18,600	4·95	18,100	5·54	21,000	3·53	11,200
21	13·8	72,100	7·34	30,500	5·04	18,600	4·95	18,100	5·44	20,500	3·43	10,800
22	13·6	70,700	7·24	29,900	5·09	18,800	4·95	18,100	5·34	20,000	3·43	10,800
23	13·3	68,600	7·44	31,000	5·09	18,800	4·95	18,100	5·24	19,500	3·33	10,400
24	13·0	66,500	7·24	29,900	5·09	18,800	4·95	18,100	5·19	19,200	3·33	10,400
25	12·7	64,400	7·04	28,800	5·14	19,000	4·94	18,100	5·14	19,000	3·33	10,400
26	12·3	61,500	6·84	27,700	5·14	19,000	4·94	18,100	5·14	19,000	3·33	10,400
27	12·0	59,400	6·64	26,600	5·14	19,000	4·89	17,900	5·14	19,000	3·23	10,100
28	11·8	58,000	6·54	26,100	5·15	19,000	4·89	17,900	5·09	18,800	3·23	10,100
29	11·5	56,000	6·44	25,500	5·15	19,000	4·84	17,600	4·94	18,100	3·23	10,100
30	11·2	54,100	6·34	25,000	5·14	19,000	4·84	17,600	4·89	17,900	3·23	10,100
31	11·2	54,100	6·14	24,000	....	.	4·84	17,600	......	. .	3·13	9,800

MONTHLY DISCHARGE of Kootenay River near Bonnington Pool, for 1914.

(Drainage area, 17,800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accurac
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June	92,200	77,200	85,400	4·79	5·34	5,080,000	D
July	84,700	54,100	75,000	4·21	4·85	4,610,000	B
August	51,500	24,000	35,600	2·00	2·31	2,190,000	D
September	23,500	18,600	19,900	1·12	1·25	1,180,000	D
October	19,000	17,100	18,100	1·02	1·18	1,110,000	C
November	23,000	17,900	20,600	1·16	1·29	1,230,000	C
December	18,100	9,800	14,100	0·79	0·91	867,000	D

KOOTENAY RIVER NEAR NELSON (3077).

Location.—At Astley's wharf, Nelson, about 2 miles above the outlet Kootenay lake, 25 miles from the mouth. Nelson District.

Records Available.—1913 and 1914.

Climatic Conditions.—The precipitation at Nelson, from December 1, 1913, to November 30, 1914, was 27.6 inches. This may be considered slightly less than usual. Considerable rain generally falls from spring till the end of June. July and August, and sometimes September, are usually dry months. October and November are generally unsettled, but not cold. The winters are mild. The thermometer seldom goes below zero, and then possibly only for one night during the winter. The average temperature throughout the winter is about 30° F. The precipitation through the winter months is fairly heavy, sometimes snow, sometimes rain. The lake no doubt has an effect on the climate. One effect of the lake is very apparent in that the river below the lake seldom, if ever, freezes. The main lake never freezes, and the west arm, on which Nelson is situated, only occasionally.

Gauge.—The gauge is a vertical staff, 20 feet long, situated on Astley's wharf, and read daily by Mr. F. A. Lidgate of Nelson.

Method of Compilation.—As in the case of Kootenay river at Bonnington falls and at Bonnington pool, discharges for the Nelson gauge are determined by subtracting the discharges of Slocan river from discharges of Kootenay river near Glade. To compensate for the inflow to Kootenay river below the outlet of the lake and above Glade, the discharge is reduced by 1 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Nelson, for 1913.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	......	7,600	0·60	6,550	0·50	6,350	......	8,250	6·1	31,500	......	86,300
2	......	7,800	......	6,520	......	6,350	......	8,710	6·1	31,500	15·1	92,300
3	......	8,000	......	6,490	......	6,350	......	9,180	6·1	31,500	15·8	97,700
4	1·15	8,200	......	6,460	......	6,350	......	9,640	......	31,300	16·6	104,000
5	......	8,000	......	6,430	......	6,350	1·70	10,100	6·0	31,000	17·3	110,000
6	......	7,800	......	6,400	......	6,350	......	10,100	6·0	31,000	17·9	114,000
7	......	7,610	......	6,380	......	6,350	......	10,100	5·9	30,400	18·3	118,000
8		7,420	0·50	6,350	0·50	6,350	1·70	10,100	5·9	30,400	......	122,000
9		7,230	......	6,340	......	6,400	1·70	10,100	6·1	31,000	19·3	126,000
10	......	7,040	......	6,330	......	6,450	1·75	10,300	6·3	32,600	19·5	127,000
11	0·70	6,850	......	6,315	......	6,500	1·85	10,700	......	34,000	19·9	130,000
12	......	6,850	......	6,300	......	6,550	1·95	11,100	6·8	35,500	20·1	132,000
13		6,850		6,290		6,600	......	12,100	7·0	36,700	20·3	134,000
14		6,850		6,280		6,650	2·40	13,000	7·4	39,100	20·25	133,000
15	......	6,850	0·40	6,270	0·65	6,700	2·90	15,400	7·6	40,300	......	132,000
16	......	6,850	......	6,280	......	6,760	3·20	16,800	7·7	40,900	20·0	131,000
17	......	6,850	......	6,290	......	6,830	3·40	17,800	7·8	41,500	19·7	129,000
18	0·70	6,850	......	6,300	......	6,900	3·70	19,200	......	42,100	19·2	125,000
19	......	6,810	......	6,315	......	6,960	4·0	20,700	8·0	42,700	18·9	122,000
20	......	6,775	......	6,330	......	7,020	......	22,600	8·1	43,300	18·7	121,000
[illegible]		6,730	......	6,340	......	7,080	4·8	24,600	8·1	43,300	18·35	118,000
[illegible]		6,685	0·50	6,350	0·80	7,150	5·0	25,700	8·3	44,500	......	115,000
[illegible]	......	6,640	......	6,350	......	7,100	5·2	26,700	8·5	45,800	17·5	111,000
24	......	6,595	......	6.350	......	7,060	5·3	27,200	8·9	48,300	17·4	110,000
25	0·60	6,550	......	6,350	......	7,020	5·4	27,700	......	51,600	17·1	108,000
[illegible]		6,550	......	6,350	......	6,980	5·5	28,300	9·9	54,900	17·0	107,000
[illegible]	......	6,550	......	6,350	......	6,940	......	29,200	10·6	59,700	16·6	104,000
[illegible]	......	6,550	......	6,350		6,900	5·85	30,100	11·4	65,300	16·3	102,000
[illegible]	......	6,550	......	......	0·70	6,850	6·0	31,000	12·1	70,200	......	100,000
[illegible]	......	6,550	......	......	......	7,320	6·1	31.500	12·8	75,200	15·85	98,000
[illegible]	......	6,550		......	......	7,780		......	13·5	80,300	......	......

DAILY GAUGE HEIGHT AND DISCHARGE OF Kootenay River near Nelson, for 1913.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	15·6	96,100	8·7	47,000	5·6	28,800	4·0	20,700	2·8	14,900	1·95	11,100
2	15·4	94,600	8·6	46,400	5·6	28,800	3·9	20,200	......	14,900	1·95	11,100
3	15·2	93,100	......	45,500	5·5	28,300	3·8	19,700	2·8	14,900	1·9	10,900
4	15·0	91,600	8·3	44,500	5·5	28,300	3·7	19,200	2·8	14,900	1·9	10,900
5	14·65	88,800	8·2	43,900	5·6	28,800	......	18,900	2·8	14,900	1·85	10,700
6		86,800	8·05	43,000	5·7	29,300	3·6	18,700	2·7	14,400	1·85	10,700
7	14·1	84,700	8·0	42,700		29,300	3·6	18,700	2·7	14,499	......	10,700
8	13·9	83,200	7·9	42,100	5·7	29,300	3·6	18,700	2·6	13,900	1·85	10,700
9	13·6	81,000	7·8	41,500	5·7	29,300	3·5	18,300	......	13,400	1·85	10,700
10	13·5	80,300	......	40,900	5·7	29,300	3·5	18,300	2·4	13,000	1·85	10,700
11	13·2	78,100	7·6	40,300	5·6	28,800	3·45	18,000	2·3	12,600	1·8	10,500
12	13·0	76,700	7·5	39,700	5·5	28,300		17,900	2·2	12,200	1·8	10,500
13	..	74,5[illegible]	7·4	39,100	5·4	27,700	3·4	17,800	2·1	11,800	1·7	10,100
14	12·4	72,300	7·3	38,500	....	27,200	3·3	17,300	2·1	11,800	......	9,900
15	12·2	70,900	7·3	38,500	5·2	26,700	3·3	17,300	2·1	11,800	1·6	9,700
16	11·7	67,400	7·2	37,900	5·1	26,200	3·3	17,300	..	11,800	1·6	9,700
17	11·45	65,600	......	37,300	5·0	25,700	3·3	17,300	2·1	11,800	1·6	9,700
18	11·05	62,800	7·0	36,700	5·0	25,700	3·2	16,800	2·1	11,800	1·6	9,700
19	10·85	61,400	6·8	35,500	4·9	25,100	.	16,800	2·1	11,800	1·55	9,500
20	.	59,800	6·7	34,900	4·8	24,600	3·2	16,800	2·05	11,600	1·55	9,500
21	10·4	58,300	6·6	34,300		24,100	3·2	16,800	2·05	11,600	......	9,400
22	10·2	56,900	6·5	33,800	4·6	23,600	3·2	16,800	2·05	11,600	1·5	9,300
23	10·1	56,200	6·4	33,200	4·6	23,600	3·2	16,800	......	11,600	1·45	9,100
24	10·0	55,600	.	32,400	4·5	23,100	3·2	16,800	2·05	11,600	1·4	8,950
25	9·85	54,600	6·1	31,500	4·5	23,100	3·1	16,300	2·05	11,600	1·3	8,650
26	9·8	[illegible],200	6·0	31,000	4·4	22,600		16,300	2·1	11,800	1·25	8,500
27		[illegible]900	6·0	31,000	4·3	22,100	3·1	16,300	2·05	11,600	1·2	8,350
28	9·[illegible]	[illegible],600	6·0	31,000		21,600	3·0	15,900	2·05	11,600	......	8,200
29	9·[illegible]	[illegible],900	5·9	30,400	4·1	21,100	3·0	15,900	2·0	11,400	1·1	8,050
30	9·1	[illegible],600	5·8	29,800	4·0	20,700	3·0	15,900	......	11,200	1·1	8,050
31	8·9	48,300	......	29,800	.. .	.	2·9	15,400	......	....	1·1	8,05

MONTHLY DISCHARGE of Kootenay River near Nelson, for 1913.

(Drainage area, 77,70) square miles)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet
January	8,200	6,550	7,020	0·40	0·45	432,00
February	6,550	6,270	6,360	0·36	0·38	353,0
March	7,780	6,350	6,750	0·38	0·44	415,00
April	31,500	8,250	17,900	1·01	1·13	1,060,0
May	80,300	30,400	43,500	2·46	2·84	2,675,0
June	134,000	86,300	115,000	6·50	7·25	6,840,0
July	96,100	48,300	69,700	3·94	[illegible]	4,286
August	47,000	29,800	37,500	2·12		2,310,0
September	29,300	20,700	26,000	1·47	.	1,550,0
October	20,700	15,400	17,500	0·99	1·[illegible]	1,08[illegible],0
November	14,900	11,200	12,600	0·71	1·[illegible]	750,0
December	11,100	8,650	9,730	0·55	0·63	598,0

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Nelson, for 1914.

Day.	January.		February.		March.		April		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·1	8,050	1·6	9,700	0·9	7,450	1·9	10,900	6·90	36,100	13·00	76,700
2	1·1	8,050	1·5	9,300	0·9	7,450	1·9	10,900	7·10	37,300	13·15	77,700
3	1·1	8,050	1·3	8,650	0·9	7,450	2·0	11,400	7·50	39,700	13·15	77,700
4	1·1	8,050	1·2	8,350	0·9	7,450	2·0	11,400	7·90	42,100	13·70	81,700
5	1·1	8,050	1·1	8,050	0·95	7,600	2·04	11,600	8·10	43,300	13·90	83,200
6	1·2	8,350	1·0	7,750	0·95	7,600	2·10	11,800	8·20	43,900	14·00	84,000
7	1·4	8,950	1·0	7,750	0·95	7,600	2·20	12,200	8·40	45,100	14·10	84,700
8	1·5	9,300	1·0	7,750	0·98	7,690	2·45	13,200	8·70	47,000	14·10	84,700
9	1·7	10,100	1·0	7,750	1·0	7,750	2·55	13,700	8·90	48,300	14·10	84,700
10	1·9	10,900	1·0	7,750	1·0	7,750	2·60	13,900	9·05	49,300	14·00	84,000
11	1·95	11,100	1·0	7,750	1·0	7,750	2·90	15,400	9·20	50,200	13·90	83,200
12	2·0	11,400	1·0	7,750	1·0	7,750	3·00	15,900	9·40	51,600	13·80	82,400
13	2·0	11,400	1·0	7,750	1·0	7,750	3·10	16,300	9·70	53,500	13·70	81,700
14	2·0	11,400	1·0	7,750	1·0	7,750	3·50	18,300	9·90	54,900	13·70	81,700
15	2·0	11,400	0·95	7,600	1·1	8,050	4·00	20,700	10·40	58,300	13·80	82,400
16	2·0	11,400	0·9	7,450	1·2	8,350	4·40	22,600	10·70	60,400	13·80	82,400
17	2·0	11,400	0·9	7,450	1·3	8,650	4·60	23,600	11·05	62,800	13·95	83,600
18	2·0	11,400	0·9	7,450	1·4	8,950	4·80	24,600	11·40	65,300	14·15	85,000
19	2·1	11,800	0·9	7,450	1·5	9,300	5·10	26,200	11·80	68,100	14·45	87,400
20	2·0	11,400	0·8	7,150	1·6	9,700	5·40	27,700	12·00	69,500	14·60	88,500
21	1·9	10,900	0·8	7,150	1·7	10,100	5·60	28,800	12·20	70,900	14·60	88,500
22	1·9	10,900	0·8	7,150	1·75	10,300	5·80	29,800	12·40	72,300	14·70	89,200
23	1·8	10,500	0·8	7,150	1·8	10,500	6·00	31,000	12·60	73,800	14·70	89,200
24	1·7	10,100	0·8	7,150	1·8	10,500	6·20	32,000	12·80	75,200	14·60	88,500
25	1·7	10,100	0·8	7,150	1·85	10,700	6·30	32,600	13·00	76,700	14·50	87,800
26	1·7	10,100	0·9	7,450	1·9	10,900	6·40	33,200	13·20	78,100	14·40	87,000
27	1·7	10,100	0·9	7,450	2·0	11,400	6·50	33,800	13·20	78,100	14·20	85,400
28	1·8	10,500	0·9	7,450	2·0	11,400	6·60	34,300	13·25	78,400	14·10	84,700
29	1·75	10,300			1·95	11,100	6·70	34,900	13·25	78,400	13·90	83,200
30	1·7	10,100			1·9	10,900	6·80	35,500	13·20	78,100	13·90	83,200
31	1·7	10,100			1·9	10,900			13·10	77,400		..

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Nelson, for 19[illegible] —*Concluded.*

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge
	Feet.	Sec.-ft.	F[illegible].	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec ft.	Feet.	Sec.-ft.	Feet.	Sec ft.
1	13·70	81,700	9·25	50,500	4·70	24,100	3·65	18,900	3·30	17,300	3·45	18,000
2	13·70	81,700	9·00	49,000	4·60	23,600	3·6[illegible]	18,900	3·40	17,800	3·40	17,800
3	13·70	81,700	8·80	47,600	4·55	23,300	3·60	18,700	3·55	18,500	3·35	17,500
4	13·70	81,700	8·60	46,400	4·50	23,100	3·55	18,500	3·70	19,200	3·35	17,500
5	13·80	82,400	8·40	45,100	4·40	22,600	3·60	18,700	3·90	20,200	3·25	17,000
6	13·80	82,400	8·20	43,900	4·25	21,800	3·55	18,500	4·05	20,900	3·20	16,[illegible]00
7	13·80	82,400	8·00	42,700	4·10	21,100	3·50	18,300	4·15	21,300	3·15	16,500
8	13·80	82,400	7·90	42,100	4·05	20,900	3·45	18,000	4·25	21,800	3·10	16,300
9	13·80	82,400	7·60	40,300	4·00	20,700	3·45	18,000	4·30	22,100	3·00	15,900
10	13·80	82,400	7·50	39,700	4·00	20,700	3·40	17,800	4·35	22,300	2·85	15,100
11	13·80	82,400	7·30	38,500	3·90	20,200	3·40	17,800	4·40	22,600	2·70	14,400
12	13·70	81,700	7·10	37,300	3·85	19,900	3·35	17,500	4·40	22,600	2·60	13,900
13	13·60	81,000	[illegible]·90	36,100	3·75	19,400	3·35	17,500	4·35	22,300	2·45	13,200
14	13·50	80,300	6·60	34,300	3·65	18,900	3·30	17,300	4·40	22,600	2·35	12,800
15	13·40	79,500	6·40	33,200	3·55	18,500	3·25	17,000	4·40	22,600	2·25	12,400
16	13·30	78,800	6·20	32,000	3·60	18,700	3·25	17,000	4·35	22,300	2·20	12,200
17	13·15	77,700	6·10	31,500	3·55	18,500	3·20	16,800	4·30	22,100	2·10	11,800
18	13·00	76,700	6·10	31,500	3·50	18,300	3·25	17,000	4·25	21,800	2·05	11,600
19	12·85	75,500	6·00	31,000	3·55	18,500	3·30	17,300	4·15	21,300	1·90	10,900
20	12·65	74,100	5·90	30,400	3·60	18,700	3·35	17,500	4·05	20,900	1·80	10,500
21	12·45	72,700	5·80	29,800	3·60	18,700	3·40	17,800	3·95	20,400	1·70	10,100
22	12·15	70,500	5·70	29,300	3·65	18,900	3·40	17,800	3·90	20,200	1·70	10,100
23	11·85	68,400	5·60	28,800	3·65	18,900	3·45	18,000	3·80	19,700	1·61	9,740
24	11·55	66,300	5·50	28,300	3·60	18,700	3·40	17,800	3·75	19,400	1·61	9,740
25	11·15	63,500	5·40	27,700	3·65	18,900	3·40	17,800	3·70	19,200	1·61	9,740
26	10·90	61,800	5·30	27,200	3·55	18,500	3·35	17,500	3·70	19,200	1·60	9,700
27	10·60	59,700	5·20	26,700	3·60	18,700	3·30	17,300	3·65	18,900	1·55	9,500
28	10·30	57,600	5·10	26,200	3·65	18,900	3·30	17,300	3·55	18,500	1·55	9,500
29	9·95	55,200	5·00	25,700	3·65	18,900	3·25	17,000	3·50	18,300	1·55	9,500
30	9·65	53,200	4·90	25,1[illegible]	3·60	18,700	3·20	16,800	3·50	18,300	1·50	9,300
31	9·45	51,900	4·80	24,[illegible]	....	....	[illegible]·25	17,000	....	....	1·50	9,300

MONTHLY DISCHARGE of Kootenay River near Nelson, for 1914.

(Drainage area, 17,700 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		ACC[illegible]Y.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage [illegible]	Total in acre-feet.	
January	11,800	8,050	10,200	0·58	0·67	627,000	...
February	9,700	7,150	7,730	0·44	0·46	42,900	...
March	11,400	7,450	9,010	0·51	0·59	554,000	..
April	35,500	10,900	21,900	1·24	1·38	1,300,000	
May	78,400	36,100	60,100	3·40	3·92	3,7[illegible]0,000	
June	89,200	76,700	84,100	4·75	5·30	5,000,000	
July	82,400	51,900	73,900	4·18	4·82	4,540,000	
August	50,500	24,600	34,000	1·92	2·21	2,090,000	
September	24,100	18,300	20,000	1·13	1·26	1,190,000	
October	18,900	16,800	17,700	1·00	1·15	1,090,000	
November	22,600	17,300	20,500	1·16	1·29	1,220,000	
December	18,000	9,300	12,500	0·71	0·8[illegible]	769,000	

KOOTENAY RIVER NEAR GLADE (3014).

Location.—Ten miles from the mouth below the mouth of Slocan river; 16 miles from Nelson at the ferry cable near Glade B.C. Nelson district.

Records Available.—July, 1913, to December, 1914.

Climatic Conditions.—The climatic conditions are similar to those at Nelson. (See Kootenay river near Nelson.) The river is open all the year round.

Gauge.—Four 5-foot gauges reading from 0 to 5 feet, 5 to 10 feet 10 to 15 feet and 15 to 20 feet are used and read twice daily by F. Striloiff of Glade.

Channel.—The channel is straight for one half mile above and below section and very uniform. There are riffles 1,000 yards above and below the section which is ideal for metering purposes.

Discharge Measurements.—Seven measurements in 1913 and seven in 1914 were made from a cable car used on the ferry cable.

Accuracy.—Accurate gauge readings are obtained, accurate measurements were taken and the gauge height-discharge curve is very satisfactory. The results at this station are considered to be within 5 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Glade, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·55	8,700	2·[illegible]	11,400	1·55	8,700	2·7	13,100	8·10	43,200	13·4	88,600
2	1·55	8,700	2·[illegible]	11,400	1·45	8,330	2·7	13,100	8·40	45,400	13·6	90,600
3	1·55	8,700	2·35	11,800	1·45	8,330	2·7	13,100	8·80	48,400	14·1	95,600
4	1·65	9,100	2·35	11,800	1·55	8,700	2·8	13,500	8·95	49,500	14·2	96,600
5	1·65	9,100	2·15	11,000	1·55	8,700	2·7	13,100	9·35	52,600	14·2	96,600
6	1·85	9,900	2·05	10,700	1·55	8,700	2·95	14,200	9·50	53,800	14·2	96,600
7	2·35	11,800	1·85	9,900	1·55	8,700	3·25	15,400	9·5	53,800	14·1	95,600
8	2·50	12,300	1·85	9,900	1·55	8,700	3·45	16,200	9·85	56,600	14·0	94,600
9	2·45	12,100	1·75	9,500	1·60	8,900	3·55	16,600	10·1	58,600	13·9	93,600
10	2·50	12,300	1·75	9,500	1·60	8,900	3·8	17,700	10·3	60,300	13·95	94,100
11	2·65	12,900	1·75	9,500	1·60	8,900	3·95	18,400	10·4	61,100	13·8	92,600
12	2·65	12,900	1·65	9,100	1·60	8,900	4·15	19,250	10·6	62,800	13·75	92,100
13	2·65	12,900	1·65	9,100	1·60	8,900	4·50	20,900	10·8	64,500	13·75	92,100
14	2·65	12,900	1·65	9,100	1·60	8,900	4·85	22,600	11·05	66,600	13·85	93,100
15	2·65	12,900	1·65	9,100	1·70	9,300	5·35	25,500	11·35	69,400	14·05	95,100
16	2·70	13,100	1·65	9,100	1·80	9,700	5·75	27,800	11·75	73,000	14·2	96,600
17	2·75	13,400	1·55	8,700	1·80	9,700	5·90	28,700	11·95	74,900	14·4	98,600
18	2·65	12,900	1·55	8,700	2·10	10,900	6·10	29,900	12·15	76,800	14·55	100,000
19	2·55	12,500	1·55	8,700	2·10	10,900	6·30	31,200	12·30	78,200	14·7	102,000
20	2·55	12,500	1·55	8,700	2·30	11,600	6·80	34,300	12·5	80,000	14·7	102,000
21	2·65	12,900	1·55	8,700	2·30	11,600	6·80	34,300	12·7	81,900	14·65	102,000
22	2·55	12,500	1·55	8,700	2·36	11,800	6·90	35,000	12·9	83,800	14·6	101,000
23	2·45	12,200	1·45	8,330	2·40	12,000	7·20	37,000	13·05	85,200	14·5	99,600
24	2·45	12,200	1·45	8,330	2·50	12,300	7·40	38,300	13·3	87,600	14·4	98,600
25	2·45	12,200	1·45	8,330	2·60	12,700	7·50	39,000	13·45	89,100	14·3	97,600
26	2·35	11,800	1·45	8,330	2·70	13,100	7·80	41,100	13·5	89,600	14·3	97,600
27	2·35	11,800	1·45	8,330	2·70	13,100	7·80	41,100	13·45	89,100	14·2	96,600
28	2·25	11,400	1·45	8,330	2·70	13,100	7·80	41,100	13·45	89,100	14·05	95,100
29	2·25	11,400	....	....	2·70	13,100	7·90	41,800	13·35	88,100	13·95	94,100
30	2·15	11,000	....	....	2·60	12,700	8·00	42,500	13·25	87,200	13·85	93,100
31	2·15	11,000	....	....	2·60	12,700	....	....	13·2	86,700	....	....

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Glade, for 1914.—*Concluded.*

Day.	July.		August.		September.		October.		November.		December	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	13·85	93,100	9·95	57,400	5·5	26,400	4·4	20,400	4·15	19,200	4·2	19,500
2	13·8	92,600	9·8	56,200	5·4	25,800	4·4	20,400	4·25	19,800	4·1	19,000
3	13·85	93,100	9·6	54,600	5·3	25,200	4·35	20,200	4·35	20,200	4·1	19,000
4	13·85	93,100	9·4	53,000	5·2	24,600	4·[illegible]	20,000	4·45	20,600	4·1	19,000
5	13·85	93,100	9·2	51,400	5·1	24,100	4·3	20,000	4·75	22,200	4·0	18,600
6	13·85	93,100	9·0	49,900	5·0	23,500	4·3	20,000	4·[illegible]	22,900	4·0	18,600
7	13·9	93,600	8·8	48,400	4·9	22,900	4·25	19,800	5·0	23,500	4·0	18,600
8	13·85	93,100	8·7	47,600	4·8	22,400	4·20	19,500	5·2	24,600	3·8	17,700
9	13·75	92,100	8·6	46,800	4·7	21,900	4·20	19,500	5·1	24,100	3·7	17,300
10	13·7	91,600	8·4	45,400	4·6	21,400	4·20	19,500	5·3	25,200	3·6	16,900
11	13·65	91,100	8·2	43,900	4·5	20,900	4·2	19,500	5·3	25,200	3·5	16,400
12	13·5	89,600	8·0	42,500	4·5	20,900	4·1	19,000	5·3	25,200	3·3	15,600
13	13·5	89,600	7·9	41,800	4·4	20,400	4·0	18,600	5·4	25,800	3·1	14,800
14	13·45	89,100	7·7	40,400	4·2	19,500	4·0	18,600	5·3	25,200	3·0	14,400
15	13·4	88,600	7·5	39,000	4·2	19,500	4·0	18,600	5·3	25,200	2·9	14,000
16	13·35	88,100	7·3	37,700	4·2	19,500	4·0	18,600	5·3	25,200	2·8	13,500
17	13·15	86,200	7·1	36,300	4·2	19,500	3·9	18,100	5·2	24,600	2·7	13,100
18	13·0	84,700	7·0	35,700	4·25	19,800	4·1	19,000	5·1	24,100	2·6	12,700
19	12·85	83,300	7·0	35,700	4·35	20,200	4·2	19,500	5·0	23,500	2·6	12,700
20	12·6	81,000	6·7	33,700	4·35	20,200	4·1	19,000	4·8[illegible]	22,600	2·4	12,000
21	12·4	79,100	6·5	32,400	4·30	20,000	4·2	19,500	4·7	21,900	2·3	11,600
22	12·15	76,800	6·4	31,800	4·3	20,000	4·2	19,500	4·7	21,900	2·3	11,600
23	12·0	75,400	6·4	31,800	4·3	20,000	4·2	19,500	4·55	21,200	2·2	11,200
24	11·75	73,000	6·4	31,800	4·3	20,000	4·2	19,500	4·5	20,900	2·2	11,200
25	11·35	69,400	6·3	31,200	4·35	20,200	4·15	19,200	4·4	20,400	2·2	11,200
26	11·3	68,900	6·1	29,900	4·4	20,400	4·1	19,000	4·4	20,400	2·2	11,200
27	11·1	67,100	6·0	29,300	4·4	20,400	4·1	19,000	4·4	20,400	2·15	11,000
28	10·35	60,700	5·9	28,700	4·4	20,400	4·1	19,000	4·2[illegible]	19,800	2·10	10,900
29	10·3	60,300	5·8	28,100	4·45	20,600	4·1	19,000	4·3	20,000	2·1	10,9
30	10·3	60,300	5·7	27,500	4·4	20,400	4·1	19,000	4·3	20,000	2·0	10,500
31	10·65	58,200	5·[illegible]	26,900	......	......	4·0	18,600			2·0	10,500

DISCHARGE MEASUREMENTS of Kootenay River near Glade, B.C., for 1914.

Date		Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Dischar
				Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec. ft
1914								
Jan.	13	C. E. Webb..	1,048	549	4,580	2·82	2·52	12
Mar.	9	C. E. R..	1,672	530	4,000	2·22	1·57	8
June	1	J. A. E........	1,909	696	11,370	7·79	13·35	88
July	20	J. A. E., G. K. B	1,909	685	10,800	7·54	12·60	81
Aug.	11	C. E. R., D. O'B. G.	1,929	640	7,916	5·46	8·22	43
"	13	D. O'B. G., Lawley	1,929	630	7,700	5·25	7·80	49
Dec.	11	J. A. E., G. K. B	1,909	556	5,020	3·42	3·45	17

MONTHLY DISCHARGE of Kootenay River near Glade, for 1914.

(Drainage area, 19,100 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accuracy
	Maximum.	Miniumm.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	13,400	8,700	11,700	0·61	0·70	719,000	A
February	11,800	8,330	9,430	0·49	0·51	524,000	A
March	13,100	8,330	10,400	0·54	0·62	640,000	A
April	42,500	13,100	26,500	1·39	1·55	1,380,000	A
May	89,600	43,200	70,600	3·70	4·27	4,340,000	A
June	102,000	88,600	96,100	5·03	5·61	5,720,000	A
July	93,600	58,200	82,300	4·31	4·97	5,060,000	A
August	57,400	28,900	39,600	2·07	2·39	2,430,000	C
September	26,400	19,500	21,400	1·12	1·25	1,270,000	A
October	20,400	18,100	19,300	1·01	1·16	1,190,000	A
November	25,800	19,200	22,500	1·18	1·32	1,340,000	A
December	19,500	10,500	14,400	0·75	0·86	885,000	A

NAKUSP CREEK NEAR NAKUSP (3021.)

Location.—Station is located west of Brouse and near R. H. Baird's ranch, about 2 miles from Nakusp. Nelson district.

Records Available.—March 20th to December 31, 1914.

Climatic Conditions.—Similar to Kooskanax creek, q.v.

Gauge.—Vertical staff enamel gauge, about 40 feet below measuring section. Read twice a week. March to December, 1914, by Mr. R. H. Baird.

Channel.—Sandy, with vegetation, and subject to shift. Beaver dams of recent construction above the section have a marked effect on the channel.

Accuracy.—Beavers were working in the vicinity of the gauge. The gauge readings are infrequent. Although results are probably within 20 per cent, they are not guaranteed.

General.—Nakusp creek rises on the west slope of the Goat mountains and flows westward, emptying into Upper Arrow lakes about 1 mile below Nakusp. This creek drains an area of approximately 40 square miles. The probable future use of Nakusp creek waters is irrigation and domestic supply.

DISCHARGE MEASUREMENTS of Nakusp Creek near Nakusp, B.C., for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1914.			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
Mar 20	C. E. Webb	1048	20·5	13·9	2·25	1·8	31·3
June 13.	G. K. B.	1927	16·0	12·6	4·28	2·2	54·0
" 21	G. K. B.	1927	16·0	11·4	4·01	2·2	45·8
29	J. A. E.	1909	15·0	12·1	3·77	1·9	45·6
Aug 12	J. A. E	1909	15·0	8·35	2·53	1·5	21·2
Sep. 3	J. A. E. and C. E. R.	1927	17·0	14·7	0·87	1·38	12·9
Oct 28	J. A. E	1909	14·5	6·72	3·13	1·65	21·0
Nov. 21	J. A. E., O. J. B.	1909	15·0	9·85	2·82	1·8	28·7

DAILY GAUGE HEIGHT AND DISCHARGE of Nakusp Creek River near Nakusp, for 1914.

Day	March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft	Feet.	Sec. ft
1				29·4		69·0	2·3	55·3
2			1·8	30·0		77·0		53·0
3				30·7	2·8	85·4		51·0
4				31·4		82·0	2·2	49·9
5			1·85	32·2		79·0		49·9
6				35·3		76·0		49·9
7				38·4	2·6	73·0	2·2	49·9
8				41·5		75·0		49·9
9			2·1	44·5		77·0		49·9
10				49·9	2·7	79·0		49·9
11				49·9		77·0	2·2	49·9
12			2·3	55·3		75·0		49·9
13				57·6	2·6	73·0		49·9
14				59·0		71·0	2·2	49·9
15			2·4	61·0		70·0		48·5
16				69·0		68·0		47·0
17				77·0	2·5	67·0		46·0
18				84·5		64·0	2·1	44·5
19			2·9	91·9		61·0		47·0
20	1·8	30·0		89·8		58·0		48·5
21		30·0		87·6	2·3	55·3	2·2	49·9
22		30·0	2·8	85·4		55·3		48·0
23		30·0		82·0		55·3		47·0
24	1·8	30·0		79·0	2·3	55·3		46·0
25		29·4		76·0		57·0	1·9	34·5
26		28·5	2·6	73·0		58·0		34·5
27	1·75	27·8		70·0		59·0		34·5
28		27·8		67·0	2·4	61·0	1·9	34·5
29	1·75	27·8		64·0		59·0	1·9	34·5
30		28·3	2·4	61·0		58·0	1·9	34·5
31		28·8				57·0		

DAILY GAUGE HEIGHT AND DISCHARGE of Nakusp Creek River near Nakusp, for 1914.

DAY	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge charge	Dis-Height	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft.
1		34·5		21·2		14·9		27·0		30·0		30·0
2	1·9	34·5	1·6	21·2		14·1		24·1	1·8	30·0	1·8	30·0
3		34·5		21·2		13·4	1·60	21·2		30·0		28·3
4		34·5		21·2	1·38	12·7		22·6	1·8	30·0		27·7
5	1·9	34·5	1·6	21·2		15·5		22·6		30·0		26·6
6		34·5		21·2		18·4	1·70	25·5		30·0	1·7	25·5
7		34·5	1·6	21·2	1·6	21·2		24·4	1·8	30·0		25·5
8		34·5	1·6	21·2		22·1		23·4		30·0		25·5
9	1·9	34·5		20·2		22·9		22·3		33·1		25·5
10		34·5		19·1		23·8	1·60	21·2		36·3	1·7	25·5
11		34·5		18·1		24·6		22·3	2·0	39·4		25·0
12		34·5	1·5	17·1	1·7	25·5		23·4		39·4		25·0
13	1·9	34·5		16·5	1·7	25·5		24·4		39·4	2·4	25·0
14		33·0		16·0		25 5	1·7	25·5		39·4		24·0
15		32·0		15·5		25·5		24·4	2·0	39·4		24·0
16		31·0		15·0	1·7	25·5		23·4		36·3		23·0
17	1·8	30·0		14·5	1·75	27·8		22·3		33·1	2·2	23·0
18		28·0		14·0		28·0	1·6	21·2	1·8	30·0		24·0
19		27·0	1·4	13·4		29·0		22·3		30·0	2·0	24·0
20	1·7	25·5		13·4		30·0		23·4		30·0		25·0
21		23·4		13·4	1·8	30·0		24·4	1·8	30·0		25·0
22	1·6	21·2	1·4	13·4		27·0	1·7	25·5		30·0		25·0
23		21·2		13·9		24·1		25·5		30·0	1·7	25·5
24		21·2		14·3	1·60	21·2		25·5		30·0		26·0
25		21·2		14·7		19·2	1·7	25·5	1·8	30·0		27·0
26	1·6	21·2	1·45	15·2	1·50	17·1		25·5		30·0		28·0
27		21·2		15·8		20·0	1·7	25·5		30·0		29·0
28		21·2		16·5		23·0		26·0		30·0	1·8	30·0
29	1·6	21·2	1·5	17·1		26·0		27·0	1·8	30·0		30·0
30		21·2		16·4	1·80	30·0		28·0		30·0		30·0
31		21·2		15·6				29·0				30·0

MONTHLY DISCHARGE of Nakusp Creek near Nakusp. for 1914.

(Drainage area, 40 square miles.)

	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage [illegible]	Total in acre-feet.
April	91·9	29·4	60·1	1·50	1·67	3,580
May	85·4	55·3	67·3	1·68	1·94	4,140
June	55·3	34·5	46·3	1·16	1·29	2,760
July	34·5	21·2	28·7	0·72	0·83	1,760
August	21·2	13·4	17·1	0·43	0·50	1,050
September	30·0	12·7	22·8	0·57	0·64	1,360
October	29·0	21·2	24·3	0·61	0·70	1,490
November	39·4	30·0	32·2	0·81	0·90	1,920
December	30·0		26·4	0·66	0·[illegible]6	1,620

Pend D'Oreille River near Waneta (3017).

Location.—The gauging section is located 9 miles above the mouth at Waneta, near Mr. A. G. Lang's ranch.

Records Available.—May, 1913, to December, 1914.

Climatic Conditions.—The precipitation is light over practically the whole Pend d'Oreille drainage. At the mouth (Waneta), from December 1, 1913, to November 30, 1914, the precipitation was 27·2 inches. The summers are hot and fairly dry. The winters are mild, the temperature seldom going below zero. The river in Canada seldom freezes over, and frazil ice is not often a serious factor.

Gauge.—Staff gauges are used and read two or three times a week, except during high water, when they are read daily, by Mr. A. C. Lang.

Channel.—The Pend d'Oreille, during its course through Canada, is very torrentuous, and there is no favourable metering section. The section chosen is very fast in high water, satisfactory at low water stages, and appears to have a permanent control.

Discharge Measurements.—Five measurements were made in 1914, and twelve in 1912 and 1913.

Accuracy.—The gauge readings are somewhat infrequent; the stream is flashy during May and June. The measurements, except at low water, are only surface measurements. The results in May and June cannot be guaranteed closer than 15 per cent and, during the other months, 10 per cent.

Discharge Measurements of Pend D'Oreille River near Waneta B.C. for 1914.

Date	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Dischar
			Feet.	Sq. ft	Ft. per sec	Feet	Sec. ft
1913							
June 11.	C. E. R., W. J. B.	1048	440	12,400	10·37	26·8	12
Nov 6	C. E. R., C. N. W.	1048	260	3,350	3·32	3·2	11
1914							
April 18	C. E. W., D. O'B. G.	1048	284	4,380	4·66	6·05	20
June 3	J. A. R., G. K. B.	1909	380	9,260	3·52	18·95	78
July 18	J. A. R., D. O'B. G.	1909	310	6,350	6·08	10·6	[illegible]
Nov 12	J. A. R., G. K. B.	1909	285	4,860	4·63	5·6	[illegible]

(All areas recomputed from soundings of January and February, 1915.)

DAILY GAUGE HEIGHT AND DISCHARGE of Pend D'Oreille River near Waneta, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·1	10,600	2·9	11,900		12,100		18,000	12·2	44,000		75,800
2	2·1	10,600		11,600		12,300		17,400		44,300	18·6	76,000
3	2·1	10,600	2·5	11,300	3·1	12,600	5·1	17,900		44,600	18·9	77,800
4	2·3	10,900		10,800		12,800		18,400		44,900		76,800
5	2·5	11,300		10,300		12,900		18,900	12·5	45,200		75,900
6	2·8	11,900	1·7	9,800	3·3	13,000		19,400		46,300	18·4	75,000
7	2·9	12,100		10,000		13,100	5·8	20,000		47,400		75,000
8	3·1	12,600		10,200	3·4	13,200		20,800	13·2	48,500		75,000
9	3·3	13,000		10,400		13,300		21,600		49,500	18·4	75,000
10	3·3	13,000	2·2	10,700	3·5	13,400		22,500		50,500		74,200
11	3·3	13,000		10,800		13,500	6·9	23,400		51,500		73,500
12	3·3	13,000		10,900		13,600	7·0	23,800	14·1	52,600		72,800
13	3·3	13,000		11,000		13,600		25,200		55,200	17·9	72,100
14	3·3	13,000	2·4	11,100		13,700	7·8	26,600		57,800		71,500
15	3·3	13,000		11,200		13,800		27,700	15·7	60,500		71,000
16	3·2	12,800	2·5	11,300	3·7	13,900		28,800		61,300		70,500
17	3·2	12,800		11,300		14,400		30,000		62,100	17·5	70,000
18	3·2	12,800		11,200		15,900	9·1	31,200		62,900		68,500
19	3·2	12,800		11,100		15,500		32,000		63,700		67,000
20	3·2	12,800	2·4	11,100	4·5	16,100		32,800	16·5	64,500	16·7	65,000
21	3·1	12,600		11,100		16,500	9·7	33,600		66,500		64,500
22	3·1	12,600		11,200		16,900		34,500		68,500		63,500
23	3·1	12,600		11,300	4·9	17,300		35,400	17·6	70,600	16·1	62,500
24	3·1	12,600	2·5	11,300		17,600		36,300		71,400		61,700
25	3·1	12,600		11,300		18,000	10·6	37,200		72,000		60,900
26	3·1	12,600		11,500		18,400		38,000	18·0	72,700		60,200
27	3·1	12,600		11,700	5·4	18,800		38,800		73,100	15·5	59,500
28	3·0	12,300	2·8	11,900		18,600	11·2	39,600		73,500		58,500
29	3·0	12,300				18,400		41,000		74,000		57,500
30	3·0	12,300			5·21	18,200		42,500	18·3	74,500		56,500
31	3·0	12,300	...	...	...	18,100			18·5	75,500	14·7	55,500

DAILY GAUGE HEIGHT AND DISCHARGE of Pend D'Oreille River near Waneta, for 1914.—*Concluded.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		54,700	7·5	25,600		12,800		11,300		16,000	6·0	20,600
2		54,000		24,000	3·1	12,600		11,400	4·8	17,000		20,500
3		53,300		24,400		12,300	2·6	11,500		17,300		20,400
4	14·1	52,600	7·0	23,800		12,100	2·6	11,500		17,600	5·9	20,300
5		51,000		23,300	2·8	11,900		11,500		18,000		20,000
6		49,500		22,800		11,800		11,500		18,400		19,700
7	13·1	48,000		22,300		11,800		11,500		18,800		19,400
8		47,000	6·4	21,800	2·7	11,700	2·6	11,500	5·4	18,900	5·6	19,200
9		46,000		21,100		11,500		11,600		19,000		19,000
10		45,000		20,400		11,300	2·7	11,700	5·5	19,100	5·4	18,800
11	12·2	44,000	5·7	19,700		11,100		11,800		19,200		17,900
12		43,000		19,100	2·3	10,900		11,900		19,300		17,000
13		42,100		18,600		10,900	2·9	12,100		19,500	4·5	16,100
14	11·6	41,200		18,100		11,000		12,100	5·7	19,700		15,500
15		40,200	5·0	17,600	2·4	11,100		12,200		20,000		14,900
16		39,200		17,100		11,300		12,300		20,300		14,400
17		38,200		16,600		11,500	3·0	12,300		20,600	3·7	13,900
18	10·6	37,200	4·5	16,100		11,700		12,600	6·1	20,900		13,700
19		36,100		15,800	2·8	11,900		13,000		21,100		13,500
20		35,000		15,500		11,900	3·5	13,400		21,300		13,300
21	9·8	34,000		15,200		11,800		13,500	6·3	21,500	3·4	13,200
22		33,200	4·1	15,000	2·7	11,700		13,700		21,400		13,100
23		32,400		14,700		11,700	3	13,900		21,300		13,000
24		31,600		14,400		11,600		14,100	6·2	21,200		12,900
25	9·0	30,800		14,100		11,500		14,300		21,100	5·2	12,800
26		29,900	3·7	13,900	2·6	11,500		14,500		21,000		12,800
27		29,000		13,600		11,500	3·9	14,500	6·1	20,900		12,700
28	8·3	28,100	3·5	13,400		11,400		14,600		20,800		12,600
29		27,400		13,300		11,300		14,700		20,700	3·1	12,600
30		26,800	3·4	13,200	2·5	11,300		14,800		20,600		12,600
31		26,200		13,000			4·1	15,000				12,600

MONTHLY DISCHARGE of Pend D'Oreille River near Waneta, for 1914.

(Drainage area, 26,800 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January	13,000	10,600	12,400	0·47	0·54	762,000
February	11,900	9,800	11,000	0·41	0·43	611,000
March	18,800	12,100	15,100	0·57	0·66	928,000
April	42,500	17,900	28,500	1·07	1·19	1,700,000
May	75,500	44,000	59,700	2·25	2·59	3,670,000
June	77,800	55,500	70,700	2·66	2·97	4,210,000
July	54,700	26,200	39,600	1·49	1·72	2,430,000
August	25,600	13,000	18,000	0·68	0·78	1,110,000
September	12,800	10,900	11,600	0·44	0·49	690,000
October	15,000	11,300	12,800	0·48	0·55	787,000
November	21,500	16,000	19,800	0·74	0·83	1,180,000
December	20,600	12,600	15,800	0·59	0·68	972,000

SAWMILL CREEK NEAR NEW DENVER (3025).

Location.—Station is at bridge at mouth. Nelson district.

Records Available.—April to December, 1914.

Climatic Conditions.—The summers are hot and fairly dry, though sometimes the precipitation is heavy. The winters are quite mild, the thermometer seldom going below zero. (Slightly colder than Nelson.) The creek freezes over for a week or so at a time during a cold spell.

Gauge.—Vertical staff enamel gauge, read daily from April to December, 1914, by Mr. G. R. Nicol, of the Steelite Powder Company, Ltd.

Channel.—Very rocky. Not liable to shift.

Discharge Measurements.—Six measurements were made in 1914.

Accuracy.—The 1914 results should be within 15 per cent.

General.—Saw-mill creek rises on the slopes of the Valhalla and Ruby Mountains, and flows eastward, emptying into Slocan lake at a point directly opposite New Denver. It drains a well-timbered area of about 21 square miles. It has been utilized for power for a saw-mill at its mouth, and may in future be used to generate power for the Steelite Powder Company's plant, situated at the mouth.

DISCHARGE MEASUREMENTS of Saw-mill Creek near Slocan Lake opposite New Denver, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914			Feet.	Sq ft.	Ft. per sec.	Feet.	Sec.-ft.
April 16	C. E. W., D. O'B. G.	1,048	23·5	29·9	2·24	0·93	67·0
May 13	J. A. E., G. K. B	1,672	24·0	37·6	3·68	1·40	138·0
June 16	G. K. B	1,927	24·0	55·8	5·72	2·05	319·0
July 8	J. A. E., D. O'B. G.	1,929	24·0	43·5	4·45	1·45	195·0
Aug. 17	D. O'B. G.	1,929	24·0	27·4	1·67	0·6	45·9
Nov. 4	J. A. E., G. K. B	1,909	24·0	18·6	1·9	0·3	35·4

DAILY GAUGE HEIGHT AND DISCHARGE Saw-mill Creek, near New Denver, B.C., for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1·10	99	1·65	216
2			1·20	114	2·05	330
3			1·3	133	2·55	482
4			1·25	124	2·30	405
5			1·15	106	1·85	27[illegible]
6			1·1	99	1·60	202
7			1·1	99	1·42	158
8			1·15	106	1·28	129
9			1·3	133	1·28	129
10			1·3	133	1·24	122
11			1·3	133	1·28	129
12			1·35	143	1·36	145
13			1·45	165	1·59	200
14			1·56	192	1·91	288
15			1·71	232	2·07	336
16			1·8	256	2·2	375
17			1·7	229	2·3	405
18			1·66	218	2·17	366
19	0·9	71	1·54	187	1·[illegible]	300
20	0·9	71	1·52	182	1·[illegible]	216
21	0·85	66	1·[illegible]	184	1·5	177
22	0·85	66	1·62	207	1·37	147
23	0·9	71	1·71	232	1·27	127
24	0·85	66	1·78	251	1·22	118
25	0·9	71	1·72	234	1·28	129
26	0·9	71	1·58	197	1·47	170
27	0·9	71	1·44	163	1·48	172
28	0·85	66	1·32	137	1·44	164
29	0·85	66	1·28	129	1·52	182
30	0·95	77·5	1·30	133	1·53	185
31			1·40	153		

DAILY GAUGE HEIGHT AND DISCHARGE Saw-mill Creek, near New Denver, B.C., for 1914.

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	1·7	229	0·92	73·6	0·34	25·4	0·60	43·0	0·41	29·7	0·2	17·0
2	1·77	248	0·87	68·0	0·32	24·2	0·57	40·9	0·42	30·4	0·17	15·5
3	1·88	279	0·86	67·0	0·33	24·8	0·54	38·8	0·40	29·0	0·2	17·0
4	1·83	265	0·89	70·0	0·35	26·0	0·5	36·0	0·37	27·2	0·17	15·5
5	1·78	251	0·78	59·0	0·32	24·2	0·45	32·5	0·41	29·7	0·17	15·5
6	1·72	234	0·79	60·0	0·32	24·2	0·4	29·0	0·40	29·0	0·16	15·0
7	1·62	207	0·83	64·0	0·30	23·0	0·4	29·0	0·37	27·2	0·15	14·5
8	1·52	182	0·74	55·0	0·33	24·8	0·4	29·0	0·37	27·2	0·10	12·0
9	1·48	172	0·62	44·6	0·31	23·6	0·37	27·2	0·35	26·0	0·15	14·5
10	1·42	158	0·59	42·3	0·35	26·0	0·37	27·2	0·35	26·0	Frozen	13·0
11	1·43	160	0·58	41·6	0·45	32·5	0·35	26·0	0·33	24·8	....	12·0
12	1·47	170	0·61	43·8	0·38	27·8	0·33	24·8	0·35	26·0	....	11·0
13	1·5	177	0·62	44·6	0·33	24·8	0·33	24·8	0·35	26·0	....	10·0
14	1·49	175	0·58	41·6	0·30	23·0	0·3	23·0	0·3	23·0	....	10·0
15	1·51	180	0·6	43·0	0·36	26·6	0·3	23·0	0·3	23·0	....	10·0
16	1·25	125	0·58	41·6	0·30	23·0	0·3	23·0	0·25	20·0	....	10·0
17	1·22	118	0·62	44·6	0·34	25·4	0·48	34·6	0·27	21·2	....	10·0
18	1·2	114	0·58	41·6	0·71	52·0	0·5	36·0	0·27	21·2	....	10·0
19	1·17	110	0·57	40·9	0·83	64·0	0·51	36·7	0·24	19·4	....	10·0
20	1·20	114	0·55	39·5	0·62	44·6	0·5	36·0	0·25	20·0	....	10·0
21	1·12	102	0·57	49·0	0·56	40·2	0·45	32·5	0·23	18·8	....	10·0
22	1·02	87	0·56	40·2	0·54	38·8	0·42	30·4	0·2	19·0	....	10·0
23	1·02	87	0·53	38·1	0·59	42·3	0·38	27·8	0·2	19·0	....	10·0
24	1·02	87	0·48	34·6	0·62	44·6	0·37	27·2	0·2	19·0	....	10·0
25	1·02	87	0·43	31·1	0·64	46·2	0·35	25·0	0·2	19·0	....	10·0
26	0·95	77·5	0·43	31·1	0·80	61·0	0·34	25·4	0·23	18·8	....	10·0
27	0·9	71	0·43	31·1	0·91	72·3	0·33	24·8	0·2	19·0	....	10·0
28	0·87	68	0·44	31·8	0·76	57·0	0·30	23·0	0·23	18·8	....	10·0
29	0·92	73·6	0·44	31·8	0·68	49·4	0·30	23·0	0·23	18·8	....	10·0
30	0·85	66	0·43	31·1	0·62	44·6	0·36	26·6	0·20	17·0	....	10·0
31	0·9	71	0·39	28·4			0·37	27·2	....	....	....	10·0

MONTHLY DISCHARGE of Saw-mill Creek, near New Denver, for 1914.

(Drainage area, 21 square miles.)

Month	Discharge in Second-Feet.				Run-Off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
May	256	99	168	8·0	9·22	10,300	D
June	482	118	226	10·8	12·0	13,400	D
July	279	66	147	6·96	8·02	9,040	D
August	73·6	28·4	45	2·14	2·47	2,770	C
September	72·3	23·0	36·2	1·72	1·92	2,150	C
October	43·0	23·0	29·5	1·40	1·61	1,810	C
November	30·4	17·0	22·8	1·08	1·20	1,360	C
December	17·0	....	11·7	0·56	0·65	719	

SLOCAN RIVER NEAR CRESCENT VALLEY (3017).

Location.—In Slocan Junction precinct, Nelson Water district, about 1 mile from the mouth on the highway bridge near Crescent Valley.

Records Available.—1913 and 1914.

Climatic Conditions.—Similar to Nelson. (See Kootenay river, near Nelson.)

Gauge.—Vertical staff gauge fastened to the bridge cribbing and read daily by Mr. Paul Peterson of Crescent Valley.

Channel.—Straight above and below the section and inclined to shift. One side of the channel is generally filled with logs during the summer. The control is not satisfactory.

Discharge Measurements.—Seven measurements were made in 1913 and five in 1914.

Accuracy.—The results during medium and low stages should be within 10 per cent or 15 per cent, but the high water results cannot be guaranteed.

General.—By subtracting the discharge of Slocan river from the discharge of Kootenay river near Glade, the discharge of Kootenay river at Bonnington pool and Bonnington falls is obtained. By subtracting 1 per cent of the discharges at Bonnington pool or Bonnington falls the discharge of Kootenay river near Nelson is obtained.

DISCHARGE MEASUREMENTS of Slocan River, near Crescent Valley, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity	Gauge Height.	Discharge
1913.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Nov. 8	C. E. W., C. E. R	1048	237	652	2·47	4·4	1,600
1914.							
Mar. 6	C. E. R., A. J. V	1672	210	470	1·91	3·45	897
May. 30	J. A. E	1909	219	1,470	5·43	8·10	7,980
Aug. 13	C. E. R., G. K. B	1928	224	845	3·01	5·1	2,540
Nov. 10	J. A. E	1909	132	579	4·11	4·82	2,380
Dec. 9	J. A. E., G. K. B	1929	128	468	2·62	3·95	1,230

Daily Gauge Height and Discharge of Slocan River near Crescent Valley, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3·4	850	3·8	1,100	3·6	970	4·1	1,340	6·4	3,980	9·05	7,290
2	3·5	900	3·8	1,100	3·6	970	4·1	1,340	7·2	4,950	9·40	7,770
3	3·5	900	4·0	1,240	3·6	970	4·1	1,340	7·7	5,570	11·40	10,800
4	3·6	970	3·9	1,170	3·5	900	4·1	1,340	7·6	5,450	11·85	11,700
5	3·7	1,040	3·8	1,100	3·5	900	4·2	1,440	7·3	5,070	11·00	10,100
6	4·0	1,240	3·9	1,170	3·5	900	4·3	1,550	7·05	4,760	10·20	8,900
7	4·8	2,090	3·9	1,170	3·5	900	5·1	2,440	7·0	4,700	10·00	8,600
8	4·7	1,980	3·9	1,170	3·2	750	5·2	2,550	7·2	4,950	9·7	8,190
9	4·5	1,750	3·9	1,170	3·2	750	5·2	2,550	7·6	5,450	9·25	7,570
10	4·4	1,650	3·9	1,170	3·2	750	5·3	2,670	8·1	6,080	9·40	7,770
11	4·3	1,550	3·8	1,100	3·2	750	5·3	2,570	7·75	5,630	9·15	7,430
12	4·2	1,440	3·7	1,040	3·3	800	5·4	2,780	7·8	5,670	9·10	7,500
13	4·1	1,340	3·6	970	3·3	800	6·0	3,500	8·1	6,080	9·25	7,570
14	4·1	1,340	3·6	970	3·3	800	6·2	3,740	8·3	6,330	9·65	8,120
15	4·1	1,340	3·6	970	3·3	800	6·70	4,340	8·65	6,770	10·00	8,600
16	4·0	1,240	3·6	970	3·4	850	7·2	4,950	9·3	7,630	10·35	9,110
17	4·0	1,240	3·7	1,040	3·4	850	7·05	4,760	9·3	7,630	10·7	9,640
18	4·0	1,240	3·6	970	4·0	1,240	6·70	4,340	9·1	7,360	10·55	9,410
19	4·0	1,240	3·6	970	4·0	1,240	7·1	4,820	9·1	7,360	10·5	9,340
20	4·0	1,240	3·6	970	4·0	1,240	7·2	4,950	9·0	7,220	10·0	8,600
21	4·0	1,240	3·6	970	4·0	1,240	7·0	4,700	9·0	7,220	9·7	8,190
22	4·0	1,240	3·6	970	4·0	1,240	6·4	3,9[illegible]	9·1	7,36[illegible]	9·25	7,560
23	3·9	1,170	3·7	1,040	4·0	1,240	6·3	3,860	9·1	7,[illegible]	9·0	7,220
24	3·7	1,040	3·6	970	4·1	1,340	6·3	3,860	9·2	7,500	8·7	6,840
25	3·8	1,100	3·6	970	4·1	1,340	6·3	3,860	9·65	8,120	8·35	6,390
26	3·9	1,170	3·6	970	4·0	1,240	6·3	3,860	9·2	7,500	8·75	6,900
27	3·9	1,170	3·6	970	4·0	1,240	6·3	3,860	9·1	7,360	8·75	6,900
28	3·8	1,170	3·6	970	4·0	1,240	6·2	3,760	8·75	6,900	8·75	6,900
29	3·6	970	....	....	4·1	1,340	6·1	3,620	8·2	6,200	8·8	6,960
30	3·7	1,040	....	....	4·1	1,340	6·2	3,740	8·2	6,200	9·1	7,360
31	3·8	1,100	....	....	4·1	1,340	....	....	8·6	6,710	....	....

DAILY GAUGE HEIGHT AND DISCHARGE of Slocan River near Crescent Valley, for 1914.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December	
	Gauge-Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Fischarge	Gauge Height.	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	9·15	7,420	5·4	2,780	4·1	1,340	4·4	1,650	5·0	2,320	4·2	1,440
2	9·20	7,500	5·4	2,780	4·1	1,340	4·4	1,650	5·2	2,550	4·2	1,440
3	9·55	7,980	5·4	2,780	4·0	1,240	4·4	1,650	5·1	2,440	4·2	1,440
4	9·65	8,120	5·3	2,670	4·0	1,240	4·4	1,650	5·1	2,440	4·1	1,340
5	9·65	8,120	5·3	2,670	4·0	1,240	4·3	1,550	5·1	2,440	4·1	1,340
6	9·65	8,120	5·3	2,670	4·0	1,240	4·3	1,550	5·1	2,440	4·1	1,340
7	9·65	8,120	5·2	2,550	4·0	1,240	4·3	1,550	5·1	2,440	4·0	1,240
8	9·6	8,050	5·4	2,780	4·0	1,240	4·2	1,440	5·0	2,320	4·0	1,240
9	9·3	7,630	5·3	2,670	4·0	1,240	4·2	1,440	5·0	2,320	4·0	1,240
10	9·3	7,630	5·3	2,670	4·0	1,240	4·2	,440	5·0	2,320	4·0	1,240
11	9·3	7,630	5·2	2,550	4·0	1,240	4·2	1,440	4·4	1,650	4·0	1,240
12	9·3	7,630	5·2	2,550	4·0	1,240	4·2	1,440	4·4	1,650	4·0	1,240
13	9·3	7,630	5·2	2,550	4·0	1,240	4·2	1,440	5·0	2,320	3·4	850
14	9·2	7,500	5·1	2,440	4·0	1,240	4·2	1,440	4·4	1,650	3·4	850
15	9·2	7,500	5·0	2,320	4·0	1,240	4·2	1,440	4·4	1,650	3·3	800
16	8·7	6,840	4·4	1,650	4·0	1,240	4·2	1,440	4·4	1,650	3·3	800
17	8·23	6,260	4·4	1,650	4·0	1,240	4·2	1,440	4·3	1,550	3·3	800
18	8·15	6,140	4·4	1,650	4·1	1,340	4·3	1,550	4·3	1,550	3·2	750
19	8·05	6,010	4·4	1,650	4·25	1,490	4·4	1,650	4·3	1,550	3·2	750
20	7·35	5,130	4·3	1,550	4·3	1,550	5·0	2,320	4·3	1,550	3·2	750
21	7·15	4,880	4·3	1,550	4·3	1,550	5·0	2,320	4·3	1,550	3·2	750
22	7·05	4,700	4·3	1,550	4·3	1,550	4·4	1,650	4·2	1,440	3·2	750
23	6·7	4,340	4·3	1,550	4·3	1,550	4·4	1,650	4·2	1,440	3·2	750
24	6·7	4,340	4·2	1,440	4·3	1,550	4·3	1,550	4·2	1,440	3·2	750
25	6·3	3,860	4·2	1,440	4·3	1,550	4·3	1,550	4·2	1,440	3·2	750
26	6·2	3,740	4·2	1,440	4·3	1,550	4·3	1,550	4·2	1,440	3·3	800
27	6·1	3,620	4·2	1,440	4·4	1,650	4·3	1,550	4·2	1,440	3·3	800
28	6·0	3,500	4·2	1,440	4·4	1,650	4·3	1,550	4·2	1,440	3·3	800
29	6·05	3,500	4·2	1,440	4·4	1,650	4·3	1,550	4·2	1,440	3·3	800
30	6·1	3,620	4·1	1,340	4·4	1,650	4·4	1,650	4·2	1,440	3·3	800
31	5·75	3,500	4·1	1,340			4·4	1,650			3·3	800

MONTHLY DISCHARGE of Slocan River near Crescent Valley, for 1914.

(Drainage area, 1,300 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		ACCURACY
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	2,090	850	1,260	0·97	1·12	77,500	C
February	1,240	970	1,050	0·81	0·84	58,300	C
March	1,340	750	1,040	0·80	0·92	64,000	C
April	4,950	1,340	3,280	2·52	2·81	195,000	D
May	8,120	3,980	6,380	4·89	5·64	391,000	
June	11,700	3,390	8,170	6·29	7·02	486,000	
July	8,120	3,500	6,150	4·73	5·45	378,000	
August	2,780	1,340	2,050	1·58	1·82	126,000	C
September	1,650	1,240	1,390	1·07	1·19	82,700	B
October	2,320	1,440	1,590	1·22	1·41	97,800	B
November	2,550	1,440	1,840	1·42	1·58	109,000	B
December	1,440	750	989	0·76	0·88	60,800	C

AKOLKOLEX RIVER NEAR WIGWAM (3000).

Location.—Section 35, township 21, range 1, west 6th, about 1 mile from Wigwam, where the wagon road crosses the river just above the falls. Revelstoke District.

Records Available.—From May 1, 1913, to December 31, 1914.

Climatic Conditions.—Summers hot and moderately dry. Heavy snowfall during winters. Thermometer rarely goes below zero. Stream at section seldom freezes, except for a day or two. Anchor ice seldom forms for more than one or two days at a time.

Gauge.—Chain gauge is used, referred to three bench-marks. From May to October inclusive, gauge readings are taken three times a week; during the rest of the year once a week, by J. A. Lewis, Wigwam.

Channel.—Straight for one hundred yards above and below section. Water is swift, and flows through a rock box canyon, for 150 yards above and below the section. The control is rock and appears very permanent.

Discharge Measurements.—Measurements are made from the upstream side of the wagon bridge. It is difficult to obtain accurate soundings in high water. In 1913 ten well-distributed measurements were made, and in 1914 seven measurements were made.

Accuracy.—Apparently accurate measurements were made, but due to the infrequency of readings, the mean monthly discharge cannot be guaranteed to within 10 per cent or 15 per cent. December gauge readings were at times affected by ice. Discharges below height 2·0 cannot be guaranteed.

DISCHARGE MEASUREMENTS of Akolkolex River near Wigwam, B.C., 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
Mar. 18	C. E. Webb.	1,048	30	121	1·48	1·35	179
May 19	J. A. Elliott..	1,672	36	275	4·95	5·30	1,360
June 26..	"	1,909	37	312	5·34	6·10	1,670
July 24	"	1,909	35	239	3·88	4·30	929
Aug. 10	"	1,909	37	190	2·82	3·10	537
Sept. 6	J. A. E. & C. E. R.	1,927	40	171	2·18	2·40	373
Oct. 10..	"	1,909	37	150	2·18	2·20	329

DAILY GAUGE HEIGHT AND DISCHARGE of Akolkolex River near Wigwam, B.C. for 1914.

Day	January.		February.		March		April.		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·3	177	1·3	177	1·1	150	1·24	168	4·45	1,020	7·25	[illegible]
2	1·3	177	1·3	177	1·13	154	1·25	169	5·1	1,300	8·2	[illegible]
3	1·4	193	1·3	177	1·13	154	1·27	172	4·9	.210	7·6	[illegible]
4	1·4	193	1·25	169	1·13	154	1·29	175	4·7	1,130	7·0	[illegible]
5	1·5	210	1·25	169	1·13	154	1·3	177	4·4	1,000	6·4	[illegible]
6	1·5	210	1·25	169	1·13	154	1·61	228	4·4	1,000	6·1	[illegible]
7	1·6	226	1·25	169	1·13	154	1·92	277	4·5	1,040	5·8	[illegible]
8	1·6	226	1·25	169	1·13	154	2·24	338	4·6	1,080	5·5	[illegible]
9	1·6	226	1·25	169	1·13	154	2·33	356	4·7	1,130	5·1	[illegible]
10	1·5	210	1·2	162	1·13	154	2·44	378	4·9	1,210	5·35	[illegible]
11	1·5	210	1·2	162	1·13	154	2·57	405	5·2	1,350	5·6	[illegible]
12	1·5	210	1·2	162	1·13	154	2·78	455	5·4	1,440	5·9	[illegible]
13	1·4	193	1·2	162	1·13	154	2·99	500	5·61	1,545	6·2	[illegible]
14	1·4	193	1·2	162	1·3	177	3·2	570	5·82	1,650	6·7	[illegible]
15	1·4	193	1·2	162	1·3	177	3·27	591	6·03	1,755	7·1	[illegible]
16	1·4	193	1·15	156	1·4	193	3·34	613	6·23	1,855	7·6	[illegible]
17	1·4	193	1·15	156	1·5	210	3·4	632	5·92	1,700	7·85	[illegible]
18	1·3	177	1·15	156	1·5	210	3·38	625	5·61	1,545	8·1	[illegible]
19	1·3	177	1·13	154	1·5	210	3·36	619	5·3	1,390	7·4	[illegible]
20	1·3	177	1·13	154	1·5	210	3·34	613	5·6	1,540	6·7	[illegible]
21	1·3	177	1·13	154	1·5	210	3·3	600	5·9	1,690	6·1	[illegible]
22	1·3	177	1·13	154	1·5	210	3·3	600	6·2	1,840	5·7	[illegible]
23	1·3	177	1·13	154	1·5	210	3·3	600	6·4	1,940	5·3	[illegible]
24	1·3	177	1·12	152	1·5	210	3·3	600	6·2	1,840	4·89	[illegible]
25	1·3	177	1·12	152	1·5	210	3·31	603	6·0	1,740	5·49	[illegible]
26	1·3	177	1·12	152	1·4	193	3·32	606	5·8	1,640	6·1	[illegible]
27	1·3	177	1·1	150	1·4	193	3·34	613	5·3	1,390	6·15	[illegible]
28	1·3	177	1·1	150	1·3	177	3·49	662	4·8	1,170	6·2	[illegible]
29	1·3	177			1·3	177	3·64	714	4·4	1,000	6·5	[illegible]
30	1·3	177			1·3	177	3·8	770	5·35	1,415	6·8	[illegible]
31	1·3	177			1·3	177			6·3	1,890		

Daily Gauge Height and Discharge of Akolkolex River near Wigwam, B.C., for 1914.—*Concluded.*

Day.	July.		August		September		October.		November		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.
1	7·0	2,270	5·03	1,265	2·35	360	2·9	485	3·1	540	2·0	290
2	7·45	2,520	5·01	1,255	2·4	370	2·85	472	3·1	540	1·95	282
3	7·9	2,780	5·0	1,250	2·75	447	2·8	460	3·0	512	1·9	274
4	7·85	2,750	4·75	1,150	3·1	540	2·68	430	3·0	512	1·85	266
5	7·8	2,720	4·5	1,040	2·75	447	2·56	403	2·9	485	1·8	258
6	7·5	2,550	3·6	700	2·4	370	2·45	380	2·8	460	1·73	250
7	7·2	2,380	3·5	665	2·59	410	2·39	368	2·6	412	1·6	226
8	6·89	2,204	3·4	632	2·78	455	2·33	356	2·6	412	1·5	210
9	7·17	2,362	3·3	600	2·78	455	2·27	344	2·55	401	1·4	193
10	7·45	2,520	3·1	540	2·8	460	2·2	330	2·55	401	1·2	162
11	7·37	2,472	3·55	682	2·8	460	2·17	324	2·5	390	1·2	162
12	7·3	2,430	4·0	845	2·6	412	2·14	318	2·45	380	1·1	150
13	7·05	2,295	4·1	885	2·4	370	2·1	310	2·4	370	1·1	150
14	6·8	2,150	4·2	925	2·1	310	2·3	350	2·3	350	1·2	162
15	6·56	2,030	3·9	805	2·0	290	2·5	390	2·2	330	1·3	177
16	6·03	1,735	3·6	700	1·9	274	2·7	435	2·1	310		150
17	5·5	1,490	3·3	600	2·28	346	2·9	485	2·0	290		150
18	5·55	1,515	3·3	600	2·67	428	2·8	460	2·0	290		150
19	5·6	1,540	3·3	600	2·58	407	2·7	435	2·0	290		150
20	5·33	1,405	3·6	700	2·49	388	2·6	412	2·0	290		150
21	5·06	1,280	3·9	805	2·4	370	2·51	392	2·0	290		150
22	4·78	1,162	3·6	700	2·45	380	2·42	374	2·0	290		150
23	4·54	1,056	3·3	600	2·5	390	2·33	356	2·0	290		150
24	4·3	963	2·9	485	2·6	412	2·25	340	1·95	282		150
25	4·3	963	3·0	512	2·7	435	2·2	330	1·95	282		150
26	4·2	925	3·1	540	2·8	460	2·17	324	2·0	290		150
27	4·2	925	3·44	645	2·95	498	2·14	318	2·05	300		150
28	4·16	909	3·78	763	3·1	540	2·1	310	2·1	310		150
29	4·12	893	3·29	597	2·8	460	2·3	350	2·05	300		150
30	4·58	1,072	2·8	460	2·95	498	2·5	390	2·0	290		150
31	5·05	1,275	2·3	350			2·8	460				150

Monthly Discharge of Akolkolex River near Wigwam, B.C., for 1914.

(Drainage area, 105 square miles.)

Month	Discharge in Second-Feet.				Run-Off.		Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet.	
January	226	177	191	1·81	2·07	11,700	D
February	177	150	161	1·53	1·59	8,940	D
March	210	150	178	1·70	1·96	10,900	D
April	770	168	481	4·58	5·11	28,600	C
May	1,890	1,000	1,430	13·6	15·7	87,900	C
June	2,950	1,300	1,970	18·8	21·0	117,000	
July	2,780	893	1,790	17·0	19·6	110,000	C
August	1,260	350	739	7·04	8·12	45,400	B
September	540	274	415	3·95	4·41	24,700	B
October	485	310	384	3·66	4·22	23,600	B
November	540	282	363	3·46	3·86	21,600	B
December	290	150	184	1·72	1·98	11,100	

BEAVER RIVER NEAR SIX-MILE CREEK (3001).

Location.—Township 29, range 25, west 5th, mer. 4 miles from mouth, about 150 yards from the railway station at Six-mile creek, on downstream side of the lumber company's bridge. Revelstoke district.

Records Available.—May 24 to November 1, 1913; April 1 to December 31, 1914.

Climatic Conditions.—Summers hot and fairly dry. Winters severe (30 F.) with heavy snowfall. Ice conditions exist generally from the end of November till the end of March. Frazil ice is to be contended with.

Gauge.—Chain gauge used is referred to three bench-marks. Mr. Wm. McCreary reads the gauge daily at 5 p.m., at which time during the summer freshet, the river is considered to be at a mean height for the day.

Channel.—Straight for 100 yards above and below the section. The river is very swift during high water, and accurate soundings can only be made at low water. During the freshet in June, July, and August, water flows through two or three small side channels. The control is not very permanent.

Discharge Measurements.—Measurements are made from the downstream side of the bridge. In 1913 ten discharge measurements were made, one of which was made under ice conditions on December 3, giving a discharge of 330 c.f.s.

Accuracy.—The gauge-height-discharge curve shows a fairly close accuracy, though the section does not appear to be good. The fact that during the summer the river varies greatly on a warm day depreciates the accuracy of the gauge reading. The 1914 data are guaranteed to be within 20 per cent only, with the exception of December, which are not guaranteed at all.

DISCHARGE MEASUREMENTS of Beaver River at Six-Mile Creek, for 191

Date		Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity	Gauge Height	Disch
				Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec
June	22	J. A. E.	1,909	149	390	6·30	3·21	
"	10	"	1,909	149	480·7	5·87	3·35	
Sept.	8	"	1,027	149	373	5·62	2·70	
Oct.	24	"	1,909	51	157	4·26	1·0	

DAILY GAUGE HEIGHT AND DISCHARGE of Beaver River near Six-mile, Creek, for 1914.

Day	April		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft.
1		900	2·6	1,940	3·55	3,240
2		900	3·3	2,840	4·60	5,380
3		900	3·3	2,840	5·1	6,710
4		900	2·85	2,220	4·5	5,140
5		900	2·6	1,940	4·1	4,200
6		900	2·5	1,840	3·9	3,860
7		900	2·45	1,790	3·6	3,330
8		900	2·6	1,940	3·3	2,840
9		900	2·8	2,160	3·1	2,840
10		900	2·8	2,160	3·4	2,990
11		900	2·9	2,290	3·7	3,500
12		900	2·9	2,290	4·0	4,080
13		900	3·2	2,700	4·2	4,460
14		900	3·35	2,910	4·6	5,380
15		900	3·4	2,990	5·0	6,430
16		900	3·5	3,160	5·1	6,710
17		900	3·4	2,990	5·2	6,980
18	1·4	920	3·2	2,700	4·7	5,640
19	1·7	1,130	3·1	2,560	4·6	5,380
20	1·7	1,130	3·3	2,840	4·5	5,140
21	1·6	1,060	3·1	2,560	3·6	3,500
22	1·5	985	3·4	2,990	3·5	3,160
23	1·5	985	3·65	3,410	3·2	2,700
24	1·7	1,130	3·7	3,500	3·2	2,700
25	1·6	1,060	3·2	2,700	3·7	3,500
26	1·6	1,060	3·1	2,560	3·8	3,680
27	1·75	1,165	2·9	2,290	4·0	4,080
28	1·8	1,200	2·8	2,160	3·9	3,860
29	1·8	1,200	2·7	2,040	4·2	4,460
30	2·1	1,460	2·9	2,290	4·8	5,880
31			3·0	2,420		. . . .

DAILY GAUGE HEIGHT AND DISCHARGE of Beaver River near Six-mile Creek, for 1914—*Concluded.*

Day.	July Gauge Height	July Discharge	August Gauge Height	August Discharge	September Gauge Height	September Discharge	October Gauge Height	October Discharge	November Gauge Height	November Discharge	December Gauge Height	December Discharge
	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	5·1	6,710	4·5	5,140	2·90	2,290	2·0	[illegible]	[illegible]	735	0·9	[illegible]
2	5·2	6,980	5·1	6,710	2·80	2,160	1·8	[illegible]	[illegible]	785	0·9	615
3	5·5	7,860	4·9	6,160	3·30	2,840	1·6	[illegible]	[illegible]	735	0·9	615
4	5·3	7,280	4·4	4,920	3·00	2,420	1·5	[illegible]	[illegible]	[illegible]	[illegible]	550
5	5·2	6,980	4·1	4,280	3·10	2,560	1·2	[illegible]	[illegible]	[illegible]	[illegible]	550
6	5·1	6,710	4·0	4,050	3·00	2,420	1·3	[illegible]	[illegible]	[illegible]	[illegible]	550
7	4·9	6,160	3·6	3,330	2·90	2,290	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	550
8	4·8	5,880	3·3	2,840	2·90	2,290	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	615
9	4·8	5,880	3·8	3,680	2·20	1,550	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	615
10	5·0	6,430	3·4	2,980	2·30	1,640	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	615
11	5·2	6,980	3·3	2,840	2·70	1,74	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	615
12	5·3	7,280	3·4	2,980	2·20	1,550	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	615
13	5·4	7,560	3·5	3,160	2·40	1,740	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	670
14	5·2	6,980	3·3	2,840	2·30	1,64	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	735
15	4·8	5,880	3·4	2,980	2·20	1,55	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	615
16	3·9	3,860	3·7	3,500	2·00	1,370	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	615
17	4·5	5,140	3·7	3,500	2·10	1,460	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	615
18	5·0	6,430	3·9	3,860	2·20	1,550	[illegible]	[illegible]	[illegible]	[illegible]	0·8	550
19	5·3	7,280	3·8	3,680	2·20	1,550	1·0	670	[illegible]	[illegible]	8	550
20	4·7	5,640	4·0	4,050	2·40	1,740	1·1	[illegible]	[illegible]	[illegible]	8	550
21	3·7	3,500	3·6	3,330	2·10	1,460	1·0	[illegible]	[illegible]	[illegible]	·8	550
22	3·5	3,160	3·7	3,500	1·90	1,290	1·1	[illegible]	[illegible]	[illegible]	0·8	550
23	3·[illegible]	3,500	3·8	3,680	1·70	1,130	1·1	735	1·1	735	1·1	735
24	3·8	3,680	3·5	3,160	1·60	1,060	1·0	670	1·1	735	1·4	920
25	3·6	3,330	3·6	3,330	1·80	1,200	1·0	670	1·0	670	0·9	615
26	3·[illegible]	3,500	3·4	2,980	2·30	1,640	0·95	643	1·0	670	0·8	550
27	3·5	3,160	3·3	2,840	2·40	1,740	1·0	670	1·0	670	0·8	550
28	3·3	2,840	3·2	2,700	2·20	1,550	0·9	615	1·0	670	0·8	550
29	3·7	3,500	3·25	2,700	2·30	1,640	1·0	670	0·9	615	0·9	615
30	4·[illegible]	4,680	3·20	2,700	2·10	1,460	1·1	735	0·9	615	0·8	550
31	4·[illegible]	4,050	2·80	2,160			1·0	670			0·8	550

MONTHLY DISCHARGE of Beaver River near Six-mile Creek, for 1914.

Drainage area 400 square miles.

Month	Discharge in Second-Feet. Maximum.	Discharge in Second-Feet. Minimum.	Discharge in Second-Feet. Mean.	Discharge in Second-Feet. Per square mile.	Run-Off. Depth in inches on Drainage area.	Run-Off. Total in acre-feet
April	1,460		993	2·48	2·86	[illegible]
May	3,500	1,790	2,520	6·30	7·26	[illegible]
June	6,980	2,700	4,390	11·0	12·3	[illegible]
July	7,860	2,840	5,450	13·6	15·7	[illegible]
August	6,710	2,160	3,570	8·92	10·3	[illegible]
September	2,840	1,060	1,750	4·38	4·89	[illegible]
October	1,370	615	810	2·02	2·33	[illegible]
November	785	615	712	1·78	1·99	[illegible]
December	920	550	604	1·51	1·71	[illegible]

Accuracy "D."

BLAEBERRY RIVER NEAR MOBERLY (3002).

Location.—SW. ¼ section 29, township 28, range 22, west 5th, 11 miles north of Golden, about one mile from mouth, on downstream side of C. P. R. bridge.

Records Available. April 15, 1912, to November 14, 1912; June 1, 1913, to November 30, 1913; April 1, 1914, to November 30, 1914.

Climatic Conditions.—Summers hot and dry, with occasional heavy rains, causing large discharge. Winters severe (as low as −50°F), with light snowfall. Ice conditions exist generally from the middle of November to the 1st of April. Frazil ice.

Gauge.—Vertical staff gauge, used and read three times a week by Mr. R. M. Cooper, during the open season.

Channel.—Channel is straight for about 50 yards above and below the station. The water is swift and controlled by a sandbar about 100 yards downstream. This bar probably shifts. Exceedingly high water on the Columbia may affect the gauge readings.

Discharge Measurements.—Measurements are made from downstream side of the railway bridge. In 1912 eight meterings were made, one of which was made on the 21st of February under ice conditions, the discharge was 53 c.f.s. In 1913, nine meterings were made, which formed a gauge-height-discharge curve varying considerably from that of 1912. A new curve was plotted from five measurements made in 1914, due to shift of bar.

Accuracy.—Due to the infrequency of gauge readings and the apparent non-permanency of the control the results are considered only to be within 15 per cent.

DISCHARGE MEASUREMENTS of Blaeberry River near Blaeberry, C.P.R. Bridge, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
June 12	J. A. E.	1909	82	357	5·15	3·10	1,840
July 27	"	1909	78	323	3·96	2·60	2,180
Aug 5	"	1909	78	322	4·53	2·80	1,460
Sept 10	"	1927	78	230	2·50	1·75	573
Oct 13	"	1909	66	188	2·19	1·3	412

DAILY GAUGE HEIGHT AND DISCHARGE of Blaeberry River near Golden, for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec. ft	Feet.	Sec.-ft	Feet	Sec. ft
1	1·6	505	2·0	730	3·0	1,720
2		550		730		1,980
3	1·8	600		600		2,440
4	1·4	425	1·9	600	3·8	2,940
5		442		695		3,020
6	1·5	460	2·0	730	3·9	3,120
7		425		660		2,360
8	1·3	390	1·8	600	3·0	1,720
9		390		642		1,480
10		425		681		1,360
11	1·4	425	2·0	730	2·6	1,260
12		407		765		1,720
13	1·3	390	2·1	800	3·4	2,290
14		390		880		2,680
15	1·3	390	2·3	965	3·9	3,120
16		390		1,040		3,120
17		355		1,160		2,940
18	1·2	355	2·6	1,260	3·8	2,940
19		355		1,160		2,850
20	1·2	355	2·4	1,060	3·7	2,750
21		355		1,110		2,060
22		390	2·5	1,160	2·8	1,480
23	1·3	390		1,100		1,600
24		372		1,010	3·0	1,720
25	1·2	355	2·3	965		1,660
26		407		922	2·9	1,600
27	1·5	460	2·2	880		1,600
28	1·6	505		922	3·0	1,720
29	1·7	550	2·3	965		2,210
30		630		1,310	3·7	2,760
31				1,310		

DAILY GAUGE HEIGHT AND DISCHARGE of Blaeberry River near Golden for 1914—*Concluded.*

Day.	July.		August		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		2,760	3·4	2,290	2·4	1,060	1·8	600	0·9	279	Frozen.	
2	3·7	2,760		2,440		1,010		550		290		
3		2,940	3·6	2,600	2·3	965	1·6	505	1·0	300		
4	3·9	3,120		2,680		922		527		290		
5		3,020	3·7	2,760	2·2	880	1·7	550	0·9	279		
6	3·8	2,940		2,600		800		600		267		
7		2,760	3·5	2,440	2·0	730	1·9	660	0·8	256		
8	3·6	2,600		1,980		695		630		267		
9		2,440	2·9	1,600	1·9	660	1·8	600	0·9	279		
10	3·4	2,290		1,540		575		550		279		
11		2,600	2·8	1,480	1·6	505		505	0·9	279		
12		2,940		1,420		505		460		279		
13	4·0	3,290	2·7	1,360		550	1·4	425		256		
14		2,760		1,420	1·7	550	1·4	425	0·7	236		
15	3·4	2,290	2·8	1,480		505		425		246		
16		2,440		1,420	1·5	460	1·4	425	0·8	256		
17	3·6	2,600	2·7	1,360		488		390		267		
18		2,600		1,260	1·6	505	1·2	355	0·9	279		
19		2,440	2·5	1,160		505		390		290		
20	3·4	2,290		1,060		505	1·4	425	1·0	300		
21		2,140	2·3	965	1·6	505		425		300		
22	3·2	1,980		965	1·0	482		390		324		
23		1,780		965	1·5	460	1·3	390	1·1	324		
24	2·9	1,600	2·3	965		442		355		312		
25		1,480		922	1·4	425		324	1·0	300		
26		1,480	2·2	880		460	0·9	279		290		
27	2·7	1,360		880		505		279	0·9	279		
28		1,480		965	1·7	550	0·9	279		256		
29	2·9	1,600	2·4	1,060		527		267	0·7	236		
30		1,780		1,060	1·6	505	0·8	256		230		
31	3·2	1,980		1,060				267				

MONTHLY DISCHARGE of Blaeberry River near Golden, for 1914.

(Drainage area 325 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area.	Total in acre-feet	
rch	600	355	428	1·32	1·47	25,500	D
ril	1,310	600	905	2·78	3·20	55,600	C
y	3,120	1,260	2,210	6·80	7·59	132,000	C
ne	3,290	1,360	2,340	7·20	8·30	144,000	C
y	2,760	880	1,520	4·68	5·40	93,500	C
gust	1,060	425	608	1·87	2·09	36,200	C
ptember	660	256	422	1·30	1·50	25,900	C
tober	324	236	278	0·86	0·96	16,500	C

BUGABOO CREEK (3003).

Location.—About 3 miles southwest of Spillimacheen Landing, 40 miles south of Golden, on downstream side of highway bridge 1 mile from mouth. Revelstoke district.

Records Available.—June to October, 1912; June to November, 1913; April 1 to December 15, 1914.

Climatic Conditions.—Summers hot and dry. Winters severe as low as 40° F. with light snowfall. The creek usually freezes over in November and does not open again till April. Frazil ice.

Gauge.—Vertical staff gauge, fastened to pier of bridge, and read daily during the open season by Mr. Jas. Montgomery.

Channel.—Straight for 100 feet above and below the gauge, the water is swift during freshet, there is one channel in low water and there are two at high stages.

Discharge Measurements.—Meterings are taken from the downstream side of the bridge, four being taken in 1912, eight in 1913, and three in 1914. A new curve was plotted in 1914, using 1912, 1913, and 1914 measurements.

Accuracy.—The control is apparently permanent. Daily gauge readings are obtained, and the 1914 curve appears reliable. Above a gauge height of 1·4 the results should be within 10 per cent and below 1·4, 15 per cent and 20 per cent.

DISCHARGE MEASUREMENTS of Bugaboo Creek near Spillimacheen Landing, for 1914.

Date.	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height	Discharg
			Feet	Sq. ft	Ft. per sec	Feet	Sec. ft
June 17	J. A. Elliott	1,909	60	187	10·21	3·00	1,91
July 31	"	1,909	60	151	6·40	2·35	[illegible]
Oct. 23	"	1,909	34	96	1·71	1·10	164

DAILY GAUGE HEIGHT AND DISCHARGE of Bugaboo Creek near Spillimacheen, for 1914.

Day	April		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.
1	0·45	58	1·5	310	2·1	690
2	0·45	58	1·72	415	2·3	915
3	0·5	60	1·95	560	2·9	1,760
4	0·52	62	1·72	415	3·0	1,910
5	0·6	72	1·63	370	2·45	1,105
6	0·7	86	1·52	319	2·25	856
7	0·8	100	1·5	310	2·12	712
8	0·72	89	1·52	319	2·1	690
9	0·77	96	1·75	430	2·02	618
10	0·72	89	1·8	455	2·05	600
11	0·73	91	1·9	520	2·15	745
12	0·8	100	1·87	500	2·3	915
13	0·9	120	1·82	468	2·4	1,040
14	1·0	140	1·85	487	2·7	1,400
15	1·0	140	2·1	690	3·0	1,910
16	1·1	170	2·2	800	3·25	2,285
17	1·1	170	2·15	745	3·1	2,060
18	1·05	155	2·05	645	3·4	2,510
19	1·07	161	1·95	560	3·05	1,985
20	1·2	200	1·9	520	2·75	1,535
21	1·13	179	1·9	520	2·6	1,315
22	1·15	185	1·92	536	2·32	938
23	1·15	185	2·05	645	2·2	800
24	1·17	191	2·2	800	2·12	712
25	1·22	206	2·25	856	2·23	834
26	1·17	191	2·1	690	2·4	1,040
27	1·2	200	1·95	560	2·38	1,015
28	1·2	200	1·87	500	2·42	1,066
29	1·23	209	1·77	440	2·5	1,170
30	1·3	230	1·72	415	2·6	1,315
31			1·85	487		

DAILY GAUGE HEIGHT AND DISCHARGE of Bugaboo Creek near Spillimacheen, for 1914—*Concluded.*

DAY.	July		August		September		October		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft
1	2·75	1,540	2·5	1,170	1·80	455	1·55	333	1·27	221	1·05	155
2	3·0	1,910	2·5	1,170	1·75	430	1·50	310	1·35	250	1·1	17
3	3·45	2,580	2·42	1,066	1·80	455	1·50	310	1·25	215	1·0	140
4	3·1	2,[illegible]	2·4	1,040	1·80	455	1·40	270	1·2	200	0·95	130
5	3·1	2,060	2·25	856	1·85	488	1·40	270	1·2	200	1·05	155
6	3·25	2,280	2·25	856	1·70	405	1·55	250	1·1	170	1·15	185
7	3·1	2,060	2·4	1,040	1·70	405	1·38	262	1·1	170	1·2	2
8	2·95	1,840	2·1	690	1·80	455	1·38	262	1·07	161	1·3	[illegible]
9	2·9	1,760	2·0	600	1·70	405	1·35	250	1·07	161	1·25	215
10	2·77	1,560	1·95	560	1·60	355	1·30	230	1·1	170	1·15	185
11	2·85	1,680	1·9	520	1·70	405	1·30	230	1·1	170	0·95	130
12	3·1	2,060	2·05	645	1·55	333	1·30	230	1·1	170	0·95	130
13	3·0	1,910	2·1	690	1·40	270	1·30	230	1·0	140	0·85	11
14	3·15	2,140	2·1	690	1·40	270	1·30	230	0·9	120	0·75	9
15	2·9	1,760	2·15	745	1·40	270	1·27	221	0·9	120	0·7	8
16	2·67	1,410	2·05	645	1·30	230	1·25	215	0·8	100	Frozen	
17	2·47	1,130	2·15	745	1·30	230	1·25	215	0·75	93		
18	2·6	1,320	2·0	600	1·50	310	1·35	250	0·65	79		
19	2·72	1,490	1·95	560	2·00	600	1·32	238	0·75	93		
20	2·70	1,460	2·05	645	1·65	380	1·3	230	1·0	140		
21	2·40	1,040	2·1	690	1·50	310	1·22	206	1·05	155		
22	2·20	800	2·1	690	1·40	270	1·15	185	1·0	140		
23	2·20	[illegible]	1·95	560	1·50	310	1·1	170	1·0	140		
24	2·30	915	1·85	488	1·50	310	1·1	170	1·1	170		
25	2·40	1,040	1·82	468	1·55	333	1·0	140	1·15	185		
26	2·3	910	1·85	488	1·85	488	1·1	170	1·0	140		
27	2·2	800	2·00	600	1·95	560	1·1	170	0·95	130		
28	2·3	920	2·00	600	1·75	430	1·1	170	1·0	140		
29	2·2	800	1·90	520	1·60	355	1·1	170	1·0	140		
30	2·3	920	1·95	560	1·50	310	1·15	185	1·15	185		
31	2·45	1,100	1·85	488			1·35	250				

MONTHLY DISCHARGE of Bugaboo Creek near Spillimacheen, for 1914.

Drainage area, 190 square miles

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF		Accu
	Maximum	Minimum	Mean	Per Square Mile	Depth in inches on Drainage Area	Total in Acre-feet	
March	230	58	139·8	0·736	0·82	8,320	D
April	856	310	525	2·76	3·18	32,300	B
May	2,310	600	1,217	6·40	7·14	72,400	B
June	2,585	800	1,486	7·82	9·02	91,400	B
July	1,170	468	700	3·68	4·24	44,000	B
August	560	230	375	1·97	2·20	22,300	B
September	333	140	226	1·19	1·37	13,900	B
October	250	79	156	0·82	0·92	9,300	D

CANYON CREEK (3051).

Location.—Township 26, range 22, west 5th, mer. about one-half mile fr Columbia river, and 6 miles from Golden. The spillways and the sluice Columbia River Lumber Company's dam are used as weirs. Revelstoke distr

Records Available.—June 15 to December 30, 1914.

Climatic Conditions.—Summers hot and little rainfall. Winters severe, as low as −50° F., with 10 to 15 feet of snow. (See Columbia River, Golden.)

NOTE.—It was intended to publish the "Records Available" in this re but, through an oversight, this is impossible. The results however, will be av able at this office after April 1, 1915.

COLUMBIA RIVER, GOLDEN (3005.)

Location.—SW. ¼ sec. 12, township 27, range 22, west 5th. mer. mouth of Kicking Horse river, one mile from Golden, B.C., 100 yards belo Columbia River Lumber Company's mill.

Records Available.—During the open season from 1903-14. Gauge heights from 1903-11 were obtained through the courtesy of the Columbia River Lumber Company. One ice measurement made in February, 1912, gave a discharge of 795 c.f.s., and one made in February, 1914, gave a discharge of 894 c.f.s.

Climatic Conditions.—In 1914 the precipitation amounted to 14·19 inches of which about 3 or 4 feet was snow. The summers are warm and fairly dry. The winters are very severe, as low as 50 ° F., during some winters, with a fairly heavy snowfall. Ice conditions generally exist from the middle of November till the end of March. Frazil ice may be expected.

Gauge.—Vertical staff gauge, referred to three bench-marks, and read daily by Mr. Jas. T. Wood during the open season.

Channel.—The section is located in the middle of a straight stretch of river of 1,500 feet. At low water there is a pronounced riffle 300 yards below the gauge, but at high water this riffle disappears.

Discharge Measurements.—Measurements are made from boat held by temporary cable about 100 yards below mill. Eight discharge measurements were made in 1912, five in 1913, and three in 1914.

Accuracy.—The gauge readings are good. Great difficulty is encountered in metering river at high water, and during June and July accuracy is not guaranteed to within 20 per cent, but in the remaining months it is probably within 15 per cent.

DISCHARGE MEASUREMENTS of Columbia River at Golden, B.C., 1914.

Date	Hydrographer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
Mar. 2	C. E. W., W. J. G.	1,048	175	616	1·45		894[1]
[illegible] 30	J. A. Elliott	1,909	390	2,540	4·09	7·95	10,400
" 14	"	1,909	200	855	2·65	2·48	2,260

[1] Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Golden, B.C. for 1914.

Day	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft
1		1,900	3·15	3,020	6·15	[illegible]
2		1,900	4·00	4,060	7·85	10,020
3		1,900	4·05	4,120	7·50	9,350
4		1,900	4·08	4,160	7·40	[illegible]
5	2·10	1,920	4·12	4,220	7·20	[illegible]
6	2·10	1,920	4·15	4,250	7·10	[illegible]
7	2·10	1,920	4·20	4,320	7·25	[illegible]
8	2·10	1,920	4·22	4,350	7·38	[illegible]
9	2·12	1,940	4·30	4,460	7·40	[illegible]
10	2·20	2,000	4·05	4,120	7·40	[illegible]
11	2·30	2,100	5·65	6,360	7·28	[illegible]
12	2·20	2,000	5·42	6,020	7·20	[illegible]
13	2·15	1,960	5·30	5,845	7·20	[illegible]
14	2·05	1,880	5·10	5,560	7·30	[illegible]
15	2·30	2,100	5·00	5,420	7·10	[illegible]
16	2·75	2,560	6·85	8,230	8·65	[illegible]
17	3·70	3,680	6·58	7,800	8·20	[illegible]
18	3·60	3,560	6·48	7,640	9·75	[illegible]
19	3·60	3,560	6·28	7,320	9·55	[illegible]
20	3·60	3,560	6·20	7,190	9·50	[illegible]
21	·70	3,680	6·20	7,190	9·50	[illegible]
22	3·72	3,700	6·20	7,190	9·50	[illegible]
23	3·72	3,700	6·25	7,270	9·45	[illegible]
24	3·70	3,680	6·20	7,190	9·40	[illegible]
25	3·70	3,680	6·15	7,120	9·40	[illegible]
26	3·60	3,560	6·02	6,920	9·40	[illegible]
27	3·60	3,560	6·00	6,890	9·45	[illegible]
28	3·50	3,440	6·00	6,890	9·50	[illegible]
29	3·50	3,440	6·02	6,920	9·50	[illegible]
30	3·40	3,320	6·10	7,040	9·50	[illegible]
31			6·30	7,350		

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Golden, B.C., for 1914—*Concluded.*

Day.	July.		August.		September.		October.		November.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft.
1	9·45	14,600	7·80	9,920	5·30	5,840	3·8	3,800	2·1	1,920
2	9·40	14,400	7·71	9,730	5·25	5,770	3·7	3,680	2·32	2,120
3	9·48	14,720	7·70	9,730	5·25	5,770	3·6	3,560	2·4	2,200
4	9·25	13,800	7·65	9,640	5·10	5,560	3·47	3,400	2·4	2,200
5	9·32	14,080	7·65	9,640	4·95	5,350	3·35	3,260	2·4	2,200
6	9·52	14,880	7·65	9,640	4·80	5,140	3·0	2,840	2·3	2,100
7	9·65	15,400	7·65	9,640	4·70	5,000	3·0	2,840	2·25	2,050
8	10·25	18,050	7·60	9,540	4·65	4,930	2·9	2,740	2·2	2,000
9	10·42	18,900	7·55	9,440	4·60	4,860	2·85	2,670	2·15	1,960
10	10·60	19,800	7·40	9,100	4·55	4,790	2·8	2,620	2·10	1,920
11	10·65	19,950	7·20	8,800	4·55	4,790	2·8	2,620	2·1	1,920
12	10·60	19,800	7·25	8,890	4·45	4,660	2·7	2,510	2·05	1,880
13	10·50	19,300	7·0	8,470	4·10	4,190	2·6	2,400	2·0	1,840
14	10·50	19,300	6·80	8,150	3·70	3,680	2·5	2,300	1·90	1,760
15	10·60	19,800	6·65	7,910	3·30	3,200	2·4	2,200	1·90	1,760
16	10·50	19,300	6·45	7,590	3·00	2,840	2·4	2,200	1·90	1,760
17	10·50	19,300	6·30	7,350	3·00	2,840	2·35	2,150	Frozen.	1,700
18	10·55	19,550	6·30	7,350	3·10	2,900	2·3	2,100		1,700
19	10·10	17,300	6·25	7,270	3·20	3,080	2·3	2,100		1,600
20	9·90	16,400	6·25	7,270	3·70	3,680	2·27	2,070		1,600
21	9·70	15,600	6·26	7,270	3·80	3,800	2·25	2,050		1,600
22	9·50	14,800	6·25	7,270	3·60	3,560	2·25	2,050		1,600
23	9·30	14,000	6·20	7,19	3·50	3,440	2·2	2,000		1,600
24	9·10	13,300	6·00	6,890	3·50	3,440	2·2	2,000		1,600
25	8·80	12,300	5·85	6,670	3·32	3,220	2·2	2,000		1·600
26	8·65	11,850	5·80	6,590	3·20	3,080	2·15	1,960		1,600
27	8·45	11,320	5·73	6,510	3·50	3,440	2·15	1,960		1,600
28	8·20	10,700	5·60	6,290	3·80	3,800	2·15	1,960		1,700
29	8·05	10,400	5·40	5,990		3,800	2·1	1,920		1,700
30	7·90	10,110	4·40	5,990		3,800	2·1	1,920		1,700
31	7·85	10,020	5·35	5,920			2·1	1,920		

MONTHLY DISCHARGE of Columbia River at Golden, B.C., for 1914.

(Drainage area 2,500 square miles.)

Month	Discharge in Second Feet.				Run-Off.		
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre feet	Accuracy
	3,760	1,960	2,730	1·092	1·218	182,450	C
	8,250	3,120	6,014	2·405	2·773	369,700	D
	15,880	7,120	11,604	4·642	5·179	691,200	C
	19,950	10,020	15,582	6·233	7·186	959,000	C
gust	9,920	5,920	7,991	3·196	3·685	491,000	D
ptember	5,840	2,840	4,140	1·66	1·85	246,000	C
tober	3,800	1,920	2,440	0·98	1·13	150,000	C
vember	2,200		1,820	0·73	0·81	108,000	

Columbia River near Trail (3008).

Location.—Fifteen miles above international boundary, above mouth of Pend d'Oreille river, below mouth of Kootenay, at the highway bridge near Trail, B.C., Nelson district.

Records Available.—May, 1913, to December, 1914.

Climatic Conditions.—The climate at Trail is similar to Nelson, but a little more extreme, i.e., a little hotter in summer and colder in winter. The total precipitation is about the same. See Kootenay river near Nelson.

Gauge.—A chain gauge, 60.8 feet long, is read daily by Mr. C. A. Broderick.

Channel.—The river winds from the left (looking downstream), about 100 yards above the bridge; below, the river is straight for 400 yards. The control, a pronounced riffle 100 yards below the bridge, appears permanent.

Discharge Measurements.—Measurements are made from the upstream side of the traffic bridge. Eighteen well-distributed measurements have been made.

Accuracy.—Daily gauge readings have been obtained. Reliable measurements were made throughout the year. The gauge-height-discharge curve appears to be very good. The results should be within 10 per cent.

Nelson District (I)—Highway Bridge on Columbia river near Trail, showing metering section upstream side of bridge.

Discharge Measurements of Columbia River near Trail, B.C., for 191

Date	Hydrographer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
[illegible] 3	C. E. Webb	1048	185	6,250	3.57	9.50	[illegible]
Apr. [illegible]	D. O. B. [illegible]	1048	193	7,150	3.51	11.50	[illegible]
June [illegible]	J. A. F. [illegible] K. B.	1009	610	15,6[illegible]	9.68	28.3	[illegible]
[illegible] 1	D. O. B. [illegible] J. A. F.	1009	640	19,[illegible]	11.00	[illegible].70	[illegible]
Nov. 11	J. A. F. [illegible] K. B.	[illegible]	515	9,1[illegible]	[illegible]	14.6	[illegible]
191[illegible]							
Jan. 4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Trail, B.C., for 1914.

Day.	January.		February.		March.		April.		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.
1	9·7	22,000	8·9	18,600	8·0	15,500	10·2	24,250	17·9	71,300	28·1	[illegible]
2	9·6	21,500	8·9	18,600	8·0	15,500	10·1	23,750	18·3	74,400	28·3	163,000
3	9·6	21,500	8·8	18,300	8·0	15,500	10·2	24,250	18·8	78,400	28·5	165,000
4	9·6	21,500	8·8	18,300	8·0	15,500	10·3	24,750	19·4	83,200	28·9	169,000
5	9·5	21,000	8·7	17,900	8·0	15,500	10·4	25,250	19·8	86,400	29·4	174,000
6	9·5	21,000	8·7	17,900	8·0	15,500	10·5	25,750	20·3	90,400	29·8	178,000
7	9·5	21,000	8·6	17,600	8·0	15,500	10·7	26,800	20·6	92,800	30·1	182,000
8	9·5	21,000	8·6	17,600	8·1	15,800	10·9	27,800	21·1	96,800	30·4	184,500
9	9·4	20,600	8·5	17,200	8·2	16,200	11·3	29,300	21·5	100,000	30·4	185,000
10	9·5	21,000	8·5	17,200	8·2	16,200	11·5	30,500	21·9	104,000	30·2	183,000
11	9·5	21,000	8·4	16,900	8·2	16,200	11·7	31,550	22·1	104,000	30·0	181,000
12	9·5	21,000	8·4	16,900	8·2	16,200	11·9	32,600	22·4	107,000	29·9	179,000
13	9·6	21,500	8·4	16,900	8·2	16,200	12·3	34,750	22·8	110,000	29·8	178,000
14	9·6	21,500	8·3	16,500	8·3	16,500	12·7	36,950	23·4	115,500	30·0	181,000
15	9·6	21,500	8·3	16,500	8·3	16,500	13·2	40,200	23·9	120,500	30·5	186,000
16	9·5	21,000	8·2	16,200	8·3	16,500	13·8	43,500	24·6	126,000	30·9	190,000
17	9·5	21,000	8·2	16,200	8·3	16,500	14·1	45,600	25·2	132,000	31·3	195,000
18	9·5	21,000	8·2	16,200	8·4	16,900	14·5	47,850	25·7	137,000	32·1	204,000
19	9·4	20,600	8·2	16,200	8·6	17,600	15·0	51,500	26·4	144,000	32·7	210,000
20	9·4	20,600	8·2	16,200	8·5	17,200	15·5	54,800	26·7	146,500	33·4	218,000
21	9·4	20,600	8·2	16,200	8·7	17,900	15·8	56,700	26·9	149,000	33·4	218,000
22	9·3	20,200	8·1	15,800	8·8	18,300	16·1	58,800	27·2	152,000	33·6	220,000
23	9·3	20,200	8·1	15,800	8·9	18,600	16·3	60,000	27·4	153,500	33·4	218,000
24	9·3	20,200	8·1	15,800	9·1	19,400	16·6	62,100	27·7	157,000	32·7	210,000
25	9·2	19,800	8·1	15,800	9·3	20,200	16·8	63,400	28·0	160,000	31·0	192,000
26	9·2	19,800	8·1	15,800	9·5	21,000	17·0	64,800	28·2	162,000	31·8	200,000
27	9·2	19,800	8·0	15,500	9·7	22,000	17·2	66,200	28·4	164,000	31·7	199,000
28	9·1	19,400	8·0	15,500	9·9	23,000	17·4	67,600	28·6	166,000	31·6	197,500
29	9·1	19,400	....	....	10·0	23,500	17·5	68,400	28·7	167,000	31·4	195,500
30	9·0	19,000			10·1	24,000	17·6	69,100	28·6	166,000	31·3	194,500
31	9·0	19,000			10·2	24,500		....	28·5	165,000		

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River, near Trail, B.C., for 1914—*Concluded.*

Day.	July		August		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft
1	31·3	195,000	26·0	140,500	19·7	85,200	15·2	52,500	13·8	43,800	13·0	39,000
2	31·4	196,000	25·8	138,000	19·5	84,000	15·2	52,800	13·7	43,200	12·9	38,400
3	31·6	197,500	25·7	137,000	19·3	82,000	15·3	53,400	13·8	43,800	12·9	38,400
4	32·1	203,500	25·6	135,500	19·1	80,400	15·3	53,400	13·9	44,400	12·8	37,800
5	32·7	209,500	25·5	134,500	18·9	78,800	15·4	54,100	14·0	45,000	12·8	37,800
6	33·1	215,000	25·4	133,500	18·7	77,200	15·3	53,400	14·2	46,200	12·7	37,200
7	33·7	220,500	25·2	132,000	18·5	75,600	15·2	52,800	14·4	47,500	12·7	37,200
8	33·7	221,000	25·1	130,500	18·3	74,000	15·2	52,800	14·7	49,400	12·6	36,700
9	33·6	220,000	24·9	128,500	18·1	72,400	15·1	52,200	14·9	50,800	12·5	36,500
10	33·7	220,500	24·5	125,000	17·9	71,650	15·0	51,500	15·0	51,500	12·4	35,600
11	33·7	221,000	24·0	121,000	17·9	70,950	15·0	51,500	14·9	50,800	12·2	34,500
12	33·6	219,500	23·6	117,000	17·7	69,450	14·9	50,800	14·8	50,100	12·1	34,000
13	33·6	220,000	23·2	114,000	17·5	68,000	14·9	50,800	14·8	50,100	11·9	32,900
14	33·7	221,000	22·9	111,000	17·3	66,350	14·8	50,100	14·8	50,100	11·7	31,800
15	33·7	221,500	22·6	109,000	17·1	65,500	14·7	49,400	14·7	49,400	11·5	30,800
16	33·8	222,000	22·4	105,500	16·9	63,750	14·5	48,200	14·6	48,800	11·3	29,800
17	33·7	221,000	22·2	104,500	16·7	62,400	14·4	47,500	14·6	48,800	11·1	28,500
18	33·6	220,000	21·9	104,000	16·5	61,050	14·3	46,800	14·5	48,200	10·9	27,600
19	33·3	217,000	21·8	102,500	16·3	59,700	14·3	46,800	14·4	47,500	10·8	27,200
20	33·0	214,000	21·6	101,000	16·1	58,450	14·4	47,500	14·3	46,800	10·6	26,400
21	32·5	207,500	21·5	100,000	15·9	57,050	14·4	47,150	14·1	45,600	10·5	26,000
22	31·9	200,500	21·4	99,200	15·8	56,350	14·3	46,800	13·9	44,400	10·4	25,500
23	31·2	194,000	21·3	98,400	15·7	55,700	14·3	46,800	13·7	43,200	10·4	25,500
24	30·5	186,000	21·2	97,600	15·6	55,100	14·4	47,500	13·6	42,600	10·3	25,100
25	[illegible]·9	180,000	21·1	96,800	15·5	54,450	14·4	47,500	13·5	42,000	10·3	25,100
26	[illegible]·4	173,500	20·9	94,800	15·4	53,750	14·3	46,800	13·4	41,400	10·2	24,500
27	[illegible]·7	167,000	20·7	93,200	15·3	53,400	14·3	46,800	13·3	40,800	10·2	24,500
28	28·2	161,500	20·5	91,600	15·2	52,800	14·2	46,200	13·2	40,200	10·1	24,100
29	27·6	155,500	20·3	90,000	15·2	52,800	14·1	45,600	13·1	39,600	10·0	23,500
30	26·9	149,000	20·1	88,400	15·1	52,200	14·0	45,000	13·1	39,600	9·9	23,000
31	26·4	144,000	19·9	87,200	...	...	13·9	44,400			9·8	22,500

MONTHLY DISCHARGE of Columbia River, near Trail, for 1914.

(Drainage area, 34,000 square miles.)

Month	Discharge in Second-Feet.				Run Off	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
January	22,000	19,000	20,700	0·61	0·70	1,270
February	18,600	15,500	16,800	0·49	0·51	933
March	24,500	15,500	17,800	0·52	0·60	1,09
April	69,100	23,700	43,900	1·24	1·38	2,610
May	167,000	71,300	125,000	3·68	4·24	7,69
June	220,000	163,000	190,000	5·60	6·25	11,30
July	222,000	144,000	200,000	5·89	6·79	12,30
August	140,000	87,200	112,000	3·29	3·79	6,89
September	85,200	52,200	65,700	1·93	2·15	3,91
October	54,100	44,400	46,300	1·36	1·57	2,85
November	51,500	39,600	45,900	1·35	1·51	2,73
December	39,000	22,500	30,500	0·89	1·03	1,88

Accuracy "B".

DUTCH CREEK, NEAR FAIRMONT SPRINGS (3035).

Location.—At highway bridge of Golden to Cranbrook road, half a mile from the mouth, which is almost at the outlet of Columbia lake. Revelstoke district.

Records Available.—April to August, 1914.

Climatic Conditions.—Summers, hot days, generally cool at nights, with very little rain. Winters, severe, as low as—40°F., with a light snowfall. Frazil ice. The precipitation at the mouth is similar to that at Athalmer, q.v. Toby creek.

Gauge.—Vertical staff gauges were used throughout 1914. Gauge was changed owing to shifts in channel. Gauge was read by Mr. W. Magurn, an engineer on construction, Kootenay Central railway.

Channel.—The channel is wide, sandy, and shifting.

Discharge Measurements.—Measurements are made from highway bridge at mouth. In 1914, seven measurements were made.

Co-operation.—The station was maintained in 1914 by co-operation with the Water Rights Branch (Provincial).

Accuracy.—Owing to a large shift, due to high water in June, results after May are not guaranteed.

General.—Dutch creek rises on the easterly slope of the Selkirk range, and drains an area of about 250 square miles. It empties into Columbia lake, just above the outlet, and is the first large tributary of the Columbia river.

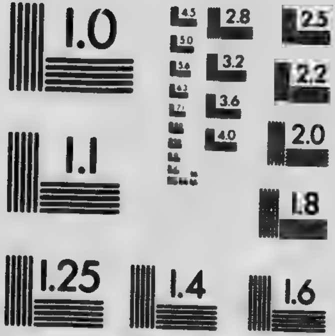
At present there is no development of power on Dutch creek, and the probable use of the water will be irrigation.

DISCHARGE MEASUREMENTS of Dutch Creek, near Fairmont Springs, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet	Sq. ft.	Ft per sec	Feet.	Sec.-ft.
May 8	D O'B G	1,048	42·5	120	2·54	1·20	305
April 10	O J. B (Prov.)..	1,048		122	0·86	0·40	104
May 19	"	1,048		214	3·36	1·70	719
June 18	J A Elliott .	1,909	93	386	7·16	3·00	2,760
Aug 1	"	1,909	70	146	3·60	1·58	525
Sept 22	O. J B (Prov.)..			91	2·4	0·98	217
Oct. 20..	J. A. E .		34	90·6	2·04	0·98	221

MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



APPLIED IMAGE Inc
1653 East Main Street
Rochester, New York 14609 USA
(716) 482 - 0300 - Phone
(716) 288 - 5989 - Fax

DAILY GAUGE HEIGHT AND DISCHARGE of Dutch Creek near Fairmont Springs' B.C., for 1914.

DAY.	April.		May.		June.		July.		August	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	0·2	85	0·98	220	1·95	1,020	2·6	2,050	1·48	499
2	0·2	85	1·25	340	2·05	1,160	2·65	2,140	1·38	421
3	0·2	85	1·4	435	2·45	1,790	2·85	2,490	1·63	638
4	0·3	95	1·3	365	2·7	2,220	2·8	2,400	1·33	386
5	0·3	95	1·3	365	2·7	2,220	2·53	1,940	1·28	355
6	0·3	95	1·2	315	2·4	1,700	1·93	991	1·08	249
7	0·35	100	1·1	265	2·0	1,080	2·13	1,280	1·08	249
8	0·4	105	1·1	265	1·7	715	2·08	1,210	1·08	249
9	0·4	105	1·3	365	1·6	605	2·23	1,430	1·08	249
10	0·45	110	1·35	400	1·6	605	....	1,350	1·03	234
11	0·5	115	1·4	435	1·6	605	....	1,300	1·08	249
12	0·53	118	1·4	435	1·7	715	....	1,200	1·18	305
13	0·53	118	1·45	475	2·0	1,080	....	1,150	1·33	386
14	0·55	120	1·5	515	2·35	1,620	....	1,100	1·28	355
15	0·58	122	1·7	715	2·7	2,220	....	1,050	1·23	330
16	0·58	122	1·8	825	2·85	2,490	....	1,000	1·33	386
17	0·58	122	1·85	887	2·9	2,580	1·88	925	1·28	355
18	0·58	122	1·7	715	3·05	2,850	1·93	991	1·38	421
19	0·63	133	1·7	715	3·1	2,940	1·98	1,060	1·33	386
20	0·64	135	1·75	770	3·1	2,940	1·93	991	1·38	421
21	0·63	133	1·75	770	2·7	2,220	1·78	803	1·18	305
22	0·68	145	1·8	825	2·25	1,460	1·83	863	0·98	220
23	0·68	145	1·78	803	2·0	1,080	1·78	803	0·88	195
24	0·7	150	1·7	715	2·05	1,160	1·43	459		175
25	0·75	162	1·75	770	2·25	1,460	1·58	587	....	160
26	0·7	150	1·80	825	2·2	1,380	1·48	499	....	160
27	0·7	150	1·75	770	2·3	1,540	1·43	459	....	150
28	0·7	150	1·55	560	2·3	1,540	1·53	542	....	150
29	0·7	150	1·5	515	2·35	1,620	1·53	542	....	130
30	0·8	175	1·75	770	2·4	1,700	1·53	542	....	130
31	.....	......	1·9	950	....	....	1·48	499	.....	12

MONTHLY DISCHARGE of Dutch Creek near Fairmont Springs, B.C., for 1914.

(Drainage area, 250 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
April	175	85	123·0	0·49	0·55	7,3
May	950	220	584·0	2·34	2·70	36,
June	2,940	605	1,610·0	6·45	7·20	95,
July	2,490	459	1,120·0	4·48	5·16	68,
August	638	....	291·0	1·16	1·34	17,

Accuracy "C".

FIELD SPRINGS, 1, 2, and 3 (3062, 3063, and 3064).

Location.—In township 28-18-5, about one-quarter mile east of the C.P.R. hotel at Field. Revelstoke district.

Records Available.—October 16 to December 31, 1914.

Climatic Conditions.—Summers: the days are generally hot and the nigh cool; June is generally a wet month, but some years July and August a very dry, and at the end of August the springs may be very low. Winters: snow generally falls in October or November and remains till April, but the snowfall is not nearly as great as at Glacier; the temperature however, at times goes very low (—50°F.).

Discharge Measurements.—Discharges are obtained on the two largest springs and a little creek (carrying pratically all the water which comes to the surface) by means of weirs. Weir No. 1 is on a small creek immediately beyond the springs (starting from the hotel). This weir is located near the foot of a 25-foot fall on this creek. Weir No. 3 is on the smaller of the two springs gauged, as it shows that during extreme cold weather this spring ceases to flow. Weir No. 2 is immediately below the confluence of two or three small springs. Weir No. 2 is a rectangular weir 1.6 feet wide. Weirs Nos. 1 and 3 are triangle weirs, with a 90°.

These weirs were established to determine if there was sufficient water for a water supply for Field and also for the C.P.R. shops at Field.

DAILY GAUGE HEIGHT AND DISCHARGE Weir No. 1, of Field Springs near Field, B.C., for 1914.

Day.	October.		November.		December.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0·26	0·088	0·2	0·044
2			0·26	0·088	0·2	0·044
3			0·24	0·071	0·2	0·044
4			0·25	0·079	0·2	0·044
5			0·26	0·088	0·2	0·044
6			0·24	0·075	0·17	0·030
7			0·25	0·079	0·17	0·030
8			0·24	0·071	0·17	0·030
9			0·24	0·071	0·17	0·030
10			0·25	0·079	0·16	0·026
11			0·24	0·071	0·16	0·026
12			0·24	0·071	0·16	0·026
13			0 24	0·071	0·13	0·015
14			0·24	0·071	0·13	0·015
15			0·22	0·056	0·12	0·014
16	0·28	0·106	0·24	0·071	0·13	0·015
17	0·29	0·115	0·23	0·064	0·13	0·015
18	0·29	0·115	0·23	0·064	0·13	0·015
19	0·29	0·120	0·24	0·071	0·13	0·015
20	0·29	0·115	0·24	0·071	0·12	0·012
21	0·28	0·106	0·22	0·056	0·12	0·012
22	0·27	0·097	0·21	0·050	0·12	0·012
23	0·27	0·097	0·21	0·050	0·10	0·008
24	0·27	0·097	0·21	0·050	0·10	0·008
25	0·27	0,097	0·23	0·064	0·09	0·006
26	0·27	0·097	0·21	0·050	0·09	0·006
27	0·26	0·093	0·21	0·050	0·08	0·004
28	0·26	0·088	0·21	0·050	0·09	0·006
29	0·26	0·088	0·2	0·044	0·08	0·005
30	0·26	0·088	0·2	0·044	0·08	0·004
31	0·28	0·106	....	..	0·08	0·005

MONTHLY DISCHARGE of Field Springs at No. 1 Weir, Field, B.C., for 1914.

MONTH.	DISCHARGE IN GALLONS.			
	Maximum daily flow.	Minimum daily flow.	Mean.	Mean daily flow
October	64,600	47,400	·101	54,400
November	47,400	23,700	·066	35,530
December	23,700	2,690	·020	10,770

DAILY GAUGE HEIGHT AND DISCHARGE, Weir No. 2, Field Springs, near Field, B.C., for 1914.

DAY.	October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1				·280	0·16	·340
2				·280	0·16	·340
3			0·14	·280	0·16	·340
4			0·14	·280	0·16	·340
5			0·13	·251	0·16	·340
6			0·15	·310	0·15	·310
7			0·14	·280	0·15	·310
8			0·14	·280	0·15	·310
9			0·14	·280	0·15	·310
10			0·15	·310	0·15	·310
11			0·15	·310	0·15	·310
12			0·15	·310	0·15	·310
13			0·14	·280	0·13	·251
14			0·14	·280	0·14	·280
15			0·13	·251	0·15	·310
16	0·25	·666	0·13	·251	0·15	·310
17	0·24	·627	0·13	·251	0·14	·280
18	0·26	·707	0·13	·251	0·14	·280
19	0·27	·748	0·14	·280	0·14	·280
20	0·26	·707	0·15	·310	0·16	·34
21	0·25	·666	0·14	·280	0·16	·340
22	0·245	·647	0·14	·280	0·16	·340
23	0·25	·666	0·15	·310	0·16	·340
24	0·245	·647	0·15	·310	0·16	·34
25			0·18	·406	0·16	·34
26			0·16	·340	0·16	·340
27			0·16	·340	0·16	·34
28			0·16	·340	0·15	31
29			0·17	·372	0·15	·31
30			0·16	·340	0·16	·34
31					0·15	·31

MONTHLY DISCHARGE of Field Springs, No. 2 Weir, Field, B.C., for 1914.

MONTH.	DISCHARGE IN GALLONS.			
	Maximum daily flow.	Minimum daily flow.	Mean.	Mean daily flow
November	218,000	135,000	0·297	159,9
December	183,000	135,000	0·302	163,0

DAILY GAUGE HEIGHT AND DISCHARGE Weir No. 3, Field Springs near Field, B.C., for 1914.

Day	October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0·23	0·064	0·19	0·038
2			0·22	0·056	0·19	0·038
3			0·19	0·038	0·19	0·038
4			0·19	0·038	0·19	0·038
5			0·2	0·044	0·19	0·038
6			0·19	0·038	0·19	0·038
7			0·18	0·034	0·19	0·038
8			0·18	0·034	0·21	0·050
9			0·18	0·034	0·21	0·050
10			0·19	0·038	0·21	0·050
11			0·19	0·038	0·2	0·044
12			0·18	0·034	0·2	0·044
13			0·18	0·034	0·16	0·026
14			0·18	0·036	0·12	0·012
15			0·18	0·034		
16	0·07	0·003	0·18	0·034	No water flowing.	
17	0·16	0·026	6	0·038		
18	0·18	0·024	0·19	0·038		
19	0·19	0·042	0·18	0·034		
20	0·19	0·038	0·19	0·038		
21	0·18	0·036	0·19	0·038		
22	0·18	0·034	0·19	0·038		
23	0·19	0·038	0·19	0·038		
24	0·18	0·034	0·19	0·038		
25	0·18	0·034	0·22	0·056		
26	0·18	0·034	0·19	0·038		
27	0·18	0·034	0·19	0·038		
28	0·18	0·034	0·19	0·038		
29	0·18	0·034	0·19	0·038		
30	0·19	0·038	0·19	0·038		
31	0·22	0·056				

MONTHLY DISCHARGE of Field Springs at No. 3 Weir, Field, B.C., for 1914.

Month.	Discharge in Gallons.			
	Maximum daily flow.	Minimum daily flow.	Mean	Mean daily flow.
October	23,600	14,000	0·034	18,300
November	21,200	18,300	0·0391	21,080
December	26,900		0·017	9,150

MONTHLY DISCHARGE of Field Springs River near Field for Total Discharge from three weirs.

Month.	Gallons per day.
	Mean.
October	72,700
November	216,000
December	153,000

NOTE.—See miscellaneous measurements "Field Creek".
Weir No. 2 not included.

FINDLAY CREEK NEAR CANAL FLATS (3036).

Location.—At highway bridge, on Findlay creek road, about 15 miles from mouth and 7 miles from Thunder Hill, B.C. Revelstoke district.

Records Available.—April 1 to December 31, 1914.

Climatic Conditions.—Precipitation at section similar to Invermere. (See Toby Creek.) Summers hot and dry. Winters severe, as low as—40°F., with light snowfall. Frazil ice.

Gauge.—Vertical staff gauge, near Mason's cabin, about 1½ miles below measuring section. Gauge is read by Mr. Octave Mason.

Channel.—Rocky above and below section. Not liable to shift.

Discharge Measurements.—Six measurements, one of which was high water, were made from the highway bridge in 1914.

Co-operation.—This station was maintained in 1914 by co-operation between the British Columbia Hydrographic Survey and the Provincial Water Rights Branch.

Accuracy.—The result should be within 20 per cent.

General.—Findlay creek rises on the easterly slope of the Selkirk mountains, and flows into Kootenay river about 3 miles south of Canal Flats. Findlay creek drains an area of about 320 square miles. Up to the present this creek has been used for lumbering and placer mining.

DISCHARGE MEASUREMENTS of Findlay Creek at Canal Flats, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1913			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft
Oct. 24	O. J. B. (Prov.)	. . .	. . . .	104·0	2·81	0·81	294
1914							
April 13	O. J. B. (Prov.)	. . . .	. . .	84·9	2·56	0·72	211
June 18	J. A. Elliott	1909	59	374·8	10·52	6·20	3,940
Aug. 1	"	1909	49	184·0	5·77	2·70	1,060
Sept. 23	O. J. B. (Prov.)	. . .	. . .	107·4	2·91	1·00	314
Oct. 20	J. A. E.	1909	44	105·3	3·11	0·9	327

DAILY GAUGE HEIGHT AND DISCHARGE of Findlay Creek near Canal Flats, B.C., for 1914.

Day.	April		May.		June.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge..
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·3	860	2·1	760	2·8	1,120
2	2·3	860	2·2	810	3·6	1,640
3	2·2	810	2·0	710	4·2	2,100
4	2·2	810	1·7	580	5·2	2,970
5	2·1	760	1·5	500	4·8	2,610
6	2·1	760	1·5	500	4·4	2,260
7	2·1	760	1·6	540	3·8	1,770
8	2·1	760	1·7	580	3·2	1,370
9	2·1	760	2·0	710	2·8	1,120
10	1·0	348	2·1	760	2·8	1,120
11	1·0	348	2·2	810	3·1	1,300
12		327	2·1	760	3·4	1,510
13	0·8	306	2·2	810	3·5	1,640
14	0·8	306	2·7	1,060	4·6	2,430
15	0·9	325	3·3	1,440	4·9	2,700
16	0·9	325	3·8	1,770	5·7	3,460
17	0·8	306	3·5	1,570	5·4	3,160
18	0·7	288	3·4	1,510	6·2	3,950
19	1·1	372	3·3	1,440	5·6	3,360
20	1·2	400	3·0	1,240	4·8	2,610
21	0·8	306	3·0	1,240	4·1	2,010
22	0·8	306	3·0	1,240	3·4	1,510
23	0·8	306	3·0	1,240	3·1	1,300
24	0·8	306	3·3	1,440	2·9	1,180
25	0·8	306	3·5	1,570	3·4	1,510
26	0·7	288	3·2	1,370	3·7	1,700
27	0·7	288	2·8	1,120	3·6	1,640
28	0·8	306	2·6	1,010	3·6	1,640
29	0·8	306	2·4	910	3·6	1,640
30	0·8	306	2·4	910	3·8	1,770
31				1,015	.....	....

DAILY GAUGE HEIGHT AND DISCHARGE of Findlay Creek near Canal Flats, B.C., for 1914.

DAY.	July.		August.		September.		October.		November.		December	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5·6	3,360	2·8	1,120	1·2	400	0·9	325	0·9	325	0·5	252
2	4·6	2,430		1,080	1·4	460	0·9	325	0·7	288	0·5	252
3	5·0	2,790		1,040	1·3	430	0·9	325	0·7	288	0·5	252
4	4·8	2,610		1,000	1·4	460	0·9	325	0·7	288	0·5	252
5	5·4	3,160		970	1·2	400	0·8	306	0·7	288	0·5	252
6	5·0	2,790		940	...	390	0·9	325	0·8	306	0·5	252
7	4·7	2,520		900	......	380	0·9	325	0·8	306	0·5	252
8	4·2	2,100		860	...	370	0·9	325	0·6	270	0·5	252
9	4·4	2,260		830	....	360	0·9	325	0·6	270	0·5	252
10	4·1	2,010		800	..	350	0·9	325	0·6	270	0·5	252
11	3·9	1,850		770		340	0·8	306	0·7	288	0·5	252
12	4·4	2,260		740	0·9	325	0·8	306	0·6	270	0·5	252
13	4·3	2,180		710	0·8	306	0·8	306	0·5	252	0·5	252
14	4·8	2,610		680	0·7	288	0·8	306	0·5	252	0·5	252
15	4·7	2,520		650	0·8	306	0·8	306	0·6	270	0·5	252
16	3·7	1,700	1·8	620	0·8	306	0·8	306	0·6	270	0·5	252
17	3·3	1,440	1·9	660	1·2	400	0·9	325	0·7	288	0·4	238
18	3·3	1,440	1·4	460	2·0	710	0·9	325	0·6	270	0·4	238
19	3·4	1,510	1·7	580	1·8	620	0·9	325	0·6	270	0·4	238
20	3·8	1,770		620	1·4	460	0·7	288	0·6	270	0·4	238
21	3·2	1,370	1·9	660	1·2	400	0·7	288	0·6	270	0·4	238
22	2·4	910	1·7	580	1·0	348	0·7	288	0·6	270	0·4	238
23	2·4	910	1·4	460	0·9	325	0·6	270	0·6	270	0·4	238
24	2·7	1,060	1·4	460	1·1	372	0·6	270	0·6	270	0·4	238
25	2·6	1,010	1·2	400	1·0	348	0·6	270	0·6	270	0·4	238
26	2·6	1,010	1·0	348		374	0·6	270	0·7	288	0·4	238
27	2·5	960	1·4	460	1·2	400	0·6	270	0·5	252	0·6	238
28	2·6	1,010	1·4	460	1·2	400	0·6	270	0·5	252	0·4	238
29	2·6	1,010	1·5	500	1·1	372	0·6	270	0·5	252	0·4	238
30	2·4	910	1·6	540	1·0	348	0·8	306	0·5	252	0·4	238
31	2·6	1,010	1·4	460			0·7	288			0·4	238

MONTHLY DISCHARGE of Findlay Creek at Canal Flats, for 1914.

Drainage Area, 320 square miles.

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
April	860	288	461	1·44	1·61	27,4
May	1,770	500	1,030	3·22	3·71	63,
June	3,950	1,120	2,000	6·25	6·97	119,
July	3,360	910	1,820	5·68	6·55	112,
August	1,120	400	688	2·15	2·48	42
September	710	288	392	1·23	1·37	23,
October	325	270	303	0·95	1·10	18,
November	325	252	275	0·86	0·96	16
December	252		245	0·77	0·89	15,

Accuracy "D."

HORSETHIEF CREEK NEAR WILMER (3008).

Location.—On the east slope of the Selkirk mountains, on traffic bridge, 4 miles from Wilmer, and 1 mile from the mouth. Revelstoke district.

Records Available.—Open season, 1912-13-14; ice measurements, November, 1913, 147 c.f.s.

Climatic Conditions.—The precipitation at the mouth is similar to Wilmer, which, from December 1, 1913, to November 30, 1914, was 15.5 inches, of which about 3 feet was snow. The summers generally are hot in the days and cool in nights. The winters are severe, as low as 40° F., some seasons. Frazil ice is evident.

Gauge.—Vertical staff gauge, referred to three bench-marks, nailed to one bridge abutment. Capt. Ch. de Crespigny reads the gauge three times a week.

Channel.—The measuring section is not a desirable one. The control does not appear permanent, and there may be a backwater effect from the Columbia. Accurate measurements may not be obtained.

Discharge Measurements.—Meterings are taken from the bridge. Four measurements were made in 1912, and nine in 1913, and four in 1914.

Accuracy.—A big shift occurred in the early part of July, which made it impossible to publish results after July 15. The results before July 15 cannot be guaranteed.

DISCHARGE MEASUREMENTS of Horsethief Creek near Wilmer, B.C., for 1914.

(Drainage Area, 170 square miles.)

Date	Hydrographer.	Meter No	Width.	Area of Section	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 4 ..	D O'B G	1048	85	166	2·17	1·55	361[1]
June 19..	J A E	1909	101	335	7·47	2·65	2,500
Aug 2	"	1909	89	288	6·41	1·85	1,810[1]
Oct. 21	"	1909	62	51·1	4·49	0·9	230

[1] Flow in older channel affects gauge Old gauge 0·5 Reading is no use

DAILY GAUGE HEIGHT AND DISCHARGE of Horsethief Creek near Wilmer, B.C., for 1914.

Day.	April.		May.		June.		July	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft
1		135	1·5	385	.	1,100	. .	1,650
2	0·8	135	.	400		1,400		1,990
3		135		420		1,710	2·6	2,320
4	3·35	135		440	2·5	2,020		2,550
5	0·8	135	1·6	460	2·2	1,320		2,770
6		140	1·6	460		1,140	2·8	3,000
7		145		460	2·0	950	2·9	3,400
8	0·9	150	1·6	460		870		3,400
9		158		480	1·9	790	2·9	3,400
10		167		500		840		3,550
11	1·0	175		520		900		3,700
12		175	1·7	540	2·0	950	3·0	3,850
13		175		540		1,200	[illegible]	3,400
14	1·0	175		540		1,540	2·7	2,650
15		225	1·7	540		1,880		2,000
16		275		745	2·6	2,320		
17	1·4	325	2·0	950		2,320		
18		325	2·0	950	2·6	2,320		
19		325	2·0	950		2,070		
20	.	325		910		1,820		
21	....	325	. .	870		1,570		
22		325		830	2·2	1,320		
23	1·4	325	1·9	790		1,270		
24		325		870		1,220		
25		325	2·0	950		1,170		
26		325	1·95	870	2·1	1,120		
27	1·4	325	1·9	790		1,120		
28		325		720		1,120		
29		325	1·8	650	2·1	1,120		
30		385	.....	720	2·2	1,320		
31	..	...	1·9	790	. .			

MONTHLY DISCHARGE of Horsethief Creek near Wilmer, B.C., for 1914.

(Drainage area 170 square miles.)

Month.	Discharge in Second-Feet				Run-Off	
	Maximum	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
April	385	135	240	1·41	1·57	14,
May	950	385	650	3·85	4·44	40,0
June	2,320	790	1,390	8·20	9·15	82,7

HOSPITAL CREEK (Weir) (3053).

Location.—At dam above intake of old smelter flume, 1½ miles from Golde Revelstoke district.

Records Available.—October to November, 1914. See miscellaneous measu ments.

Climatic Conditions.—Similar to Golden. See Columbia river near Golde

Weir.—Ten-foot Cippoletti weir.

Accuracy.—Readings are only made once a week by Mr. K. C. Robertso Accuracy, 20 per cent.

Co-operation.—The weir was established by Mr. O. J. Bergoust, Provincial Water Rights Branch. Mr. Bergoust kindly sends us copies of gauge readings.

General.—Hospital creek is a small stream flowing into Columbia river, a mile below Golden. Its only importance is in relation to its being a possible source of a water supply for Golden.

DAILY GAUGE HEIGHT AND DISCHARGE of Hospital Creek, near Golden, for 1914.

Day	October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Inches	Sec.-ft.	Inches	Sec.-ft.	Inches.	Sec.-ft.
1		8·38	3·85	6·12		3·36
2		8·38		5·92		3·33
3		8·38		5·73		3·30
4		8·38		5·53		3·26
5		8·38		5·33		3·32
6	4·75	8·38		5·14	2·5	3·19
7		8·10		4·94		
8		7·90		4·74		
9		7·60	3·25	4·52		
10		7·30		4·30		
11	4·25	7·08		4·07		
12		7·03		3·85		
13		6·99		3·63		
14		6·95		3·41		
15		6·91	2·5	3·19		
16		6·87		3·30		
17		6·84		3·40		
18		6·70		3·50		
19	4·12	6·66		3·60		
20		6·53		3·70		
21		6·40		[illegible]		
22		6·27		[illegible]		
23		6·14	2·8[illegible]	[illegible]		
24		6·01		[illegible]		
25	3·75	5·88		[illegible]		
26		5·91		3·63		
27		5·95		3·56		
28		5·98		3·49		
29		6·02	2·62	[illegible]		
30		6·05		[illegible]		
31		6·09				

MONTHLY DISCHARGE of Hospital Creek, at Golden, B.C., for

(Drainage area, 18 square miles.)

Month	Discharge in Second-Feet.				Run-Off
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.
October	8·38	5·88	7·00	0·39	0·45
November	6·12	3·19	4·15	0·23	0·26

ILLECILLEWAET RIVER, NEAR GLACIER (3010.)

Location.—In township 26, range 26, west 5, at the foot-bridge immediately above the railway bridge, 200 yards from C.P.R. hotel, Glacier. Revelstoke district.

Records Available.—June to December, 1913; open season, 1914.

Climatic Conditions.—The precipitation from December 1, 1913 to November 30, 1914, was 56·2 inches. The snowfall during that period was about 30 feet. The maximum snowfall since 1880, as recorded by the C.P.R., occurred in the winter of 1912-13, when 45 feet 1 inch of snow fell. The winters are not very severe, being slightly colder than Revelstoke. Frazil ice is to be contended with. The summers are short and the thermometer seldom goes over 85° F.

Gauge.—Vertical staff, marked in feet and inches, was used till November, when it was replaced by an enamel gauge marked in feet and tenths.

Channel.—The bed is rocky, and, during freshet, the water is very swift. The control appears permanent.

Discharge Measurements.—Twelve were made in 1913, and five in 1914, from foot-bridge near hotel.

Accuracy.—These results, though probably within 20 per cent, are not guaranteed.

DISCHARGE MEASUREMENTS of Illecillewaet River near Glacier, B.C., for 1914.

Date.		Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
				Feet.	Sq. ft.	Ft per sec.	Feet.	Sec.-ft
June	10	J. A. E.	1909	36	35	4·29	0·85	150
July	25	do	1909	34	52·2	4·39	1·20	229
Sept.	9	do	1927	34	35·2	3·50	0·97	123
Oct	12	do	1909	29	19·95	1·75	0·49	35
Nov	19	do	1909	16	10·5	2·64	0·3	27·7[1]

[1] New gauge. (See notes)

DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Glacier, for 1914.

Day	April		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.
1			1·23	168	2·06	443
2			1·31	188	2·56	693
3			1·31	188	2·56	693
4			1·23	168	1·23	168
5			1·06	132	1·06	132
6			1·06	132	1·06	132
7			1·14	148	1·06	132
8			1·31	188	0·98	117
9			1·39	210	0·89	101
10			1·39	210	1·06	132
11			1·48	235	1·06	132
12	0·64	65	1·64	285	1·39	210
13	0·73	77	1·81	344	1·48	235
14	0·64	65	1·81	344	1·48	235
15	0·64	65	1·81	344	1·89	373
16	0·64	65	1·81	344	1·89	373
17	0·64	65	1·73	315	1·98	409
18	0·64	65	1·73	315	1·73	315
19	0·73	77	1·73	315	1·48	235
20	0·64	65	1·73	315	1·23	168
21	0·64	65	1·81	344	1·23	168
22	0·64	65	1·81	344	1·23	168
23	0·64	65	1·81	344	0·98	117
24	0·73	77	1·89	373	0·98	117
25	0·73	77	1·81	344	1·06	132
26	0·73	77	1·56	260	1·14	148
27	0·81	89	1·39	210	1·14	148
28	0·81	89	1·39	210	1·31	188
29	1·06	132	1·31	188	1·48	235
30	1·06	132	1·56	260	1·73	315
31			1·81	344	...	......

DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Glacier, for 1914.—*Concluded.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	1·89	373	2·48	649	1·64	285	0·64	65	....	48	0·26	29
2	2·06	443	2·48	649	1·56	260	0·56	56	....	48	0·26	29
3	2·31	560	2·31	560	1·64	285	0·39	39	....	48	0·26	29
4	2·23	520	2·06	443	1·56	260	0·64	65	....	47	0·26	29
5	2·23	520	2·31	560	1·23	168	0·56	56	....	46	0·26	29
6	2·31	560	2·23	520	1·48	235	0·56	56	....	45	0·26	29
7	2·06	443	2·06	443	1·64	285	0·64	65	....	44	0·26	29
8	1·98	409	1·48	235	1·23	168	0·64	65	....	43	0·26	29
9	2·06	443	1·48	235	0·98	117	0·56	56	....	42	....	29
10	2·31	560	1·56	260	0·98	117	0·56	56	....	41	....	29
11	2·39	602	1·56	260	0·98	117	0·48	48	....	40	....	29
12	2·39	602	1·39	210	1·06	132	0·56	56	....	40	....	29
13	2·39	602	1·23	168	0·73	77	0·56	56	....	39	....	29
14	2·23	520	1·48	235	0·73	77	0·64	65	....	39	....	29
15	1·89	373	1·64	285	0·64	65	0·81	89	0·39	39	....	29
16	1·48	235	1·64	285	0·56	56	0·73	77	0·39	39	....	29
17	1·73	315	1·73	315	0·73	77	0·64	65	0·39	39	....	29
18	2·23	520	1·73	315	1·06	132	0·64	65	0·39	39	....	29
19	2·06	443	1·64	285	0·81	89	0·56	56	0·36	37	....	29
20	1·73	315	1·64	285	0·56	56	0·56	56	0·36	37	....	29
21	1·48	235	1·73	315	0·56	56	0·39	39	0·36	37	0·26	29
22	1·48	235	1·56	260	0·64	65	0·39	39	0·36	37	0·26	29
23	1·48	235	1·56	260	0·64	65	0·39	39	0·36	37	0·21	26
24	1·39	210	1·64	285	0·98	117	0·39	39	0·36	37	0·26	29
25	1·39	210	1·73	315	1·06	132	0·39	39	0·36	37	0·21	26
26	1·31	188	1·56	260	0·89	101	0·39	39	0·36	37	0·26	29
27	1·31	188	1·56	260	0·89	101	0·48	48	0·31	33	0·26	29
28	1·89	373	1·64	285	0·56	56	0·48	48	0·31	33	0·21	26
29	1·89	373	1·64	285	0·56	56	0·39	39	0·31	33	0·21	26
30	2·31	560	1·64	285	0·64	65	0·39	39	0·26	29	0·16	23
31	2·48	649	1·64	285	....	....	0·48	48	....	....	0·16	2

MONTHLY DISCHARGE of Illecillewaet River, near Glacier, for 1914.

Month.	Discharge in Second-Feet		
	Maximum.	Minimum.	Mean
May	373	132	
June	693	101	
July	649	188	
August	649	168	
September	285	56	
October	89	39	
November	48	29	
December	29	23	

ILLECILLEWAET RIVER NEAR REVELSTOKE (3009).

Location.—This station is located within 1 mile of the city of Revelstok and 1 mile from the mouth of the river; the gauge is located on traffic bridg in SW. ¼ section 26, township 23, range 2, west 6th ; the measuring section located on traffic bridge in NE. ¼ section 22, township 23, range 2, west 6t

Records Available.—October to December, 1911; May to December, 1912; April to November, 1913; March to November, 1914; Ice measurement, on February 27th, 1912, gave discharge of 197 c.f.s.; on January, 7th, 1914, gave 500 c.f.s.

Gauge.—A chain gauge, referred to two bench-marks, is used and read by Miss S. Moran of Revelstoke.

Channel.—Measuring section is half a mile below gauge. The section at the gauge is very fast in high water, and at the measuring section there is a possibility of backwater from the Columbia during high water. The control at the gauge appears permanent.

Discharge Measurements.—Fourteen measurements were made in 1914, and a new curve was plotted.

Accuracy.—All measurements made this year are less than 10 per cent off the curve. Daily gauge readings are obtained but the chain gauge gives some trouble to the reader. The results should be within 15 per cent.

Climatic Conditions.—At Revelstoke the precipitation from December 1, 1913, to November 30, 1914, was approximately 40·5 inches. The snowfall was approximately 10 feet (C.P.R. records), and the precipitation during the months December to March was 18 inches, practically all of which would be snow at higher altitudes. The winters are not very severe, seldom below 10° F. Frazil ice may be expected. The summers are very hot, sometimes 95° and 100° F.

DISCHARGE MEASUREMENTS of Illecillewaet River, near Revelstoke, B.C., for 1914.

Date.		Hydrographer.	Meter No	Width.	Area of Section	Mean Velocity.	Gauge Height.	Discharge.
				Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar	17	C. E. Webb	1,048	120	290·5	1·64	1·57	478
May	18	J. A. Elliott	1,672	122	704	5·21	4·80	3,670
June	9	"	1,909	123	661	5·25	4·70	3,450
"	26	"	1,909	137	820	6·33	5·70	5,190
July	23	"	1,909	136	763	4·63	4·50	3,540
Aug.	11	"	1,909	125	556	3·71	3·75	2,060[1]
"	11	"	1,909	92	658	3·87	3·75	2,500[2]
Sept	5	C. E. R., J. A. E.	1,927	130	506	3·57	3·24	1,800[1]
Oct	9	J. F. E.	1,909	118	364	2·50	2·38	910
Sept	5	J. A. P., C. E. R.	1,927	107	682	3·04	3·39	2,080[2]
Oct	28	R. G. S., G. E. W.		147	325	2·49	1·95	809
"	9	J. A. E.	1,909	87	482	2·16	2·40	1,040[2]
"	26	"	1,909	95	400	1·76	1·95	705[2]
Nov	17	"	1,909	115	316	2·27	1·73	718

[1] At regular measuring section
[2] At gauge section

DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Revelstoke, for 1914.

Day.	March.		April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		400	1·7	520	3·8	2,460	5·2	4,350
2		400	1·6	460	4·35	3,140	5·85	5,360
3		400	1·5	400	4·7	3,620	6·75	6,900
4		400	1·5	400	4·75	3,690	6·30	6,120
5		400	2·1	790	4·8	3,760	5·60	4,960
6	1·6	460	2·3	[illegible]	4·8	3,760	5·00	4,050
7	1·6	460	2·8	1,370	4·7	3,620	4·80	3,760
8	1·6	[illegible]	2·85	1,420	4·5	3,340	4·5	3,340
9	1·5	400	2·95	1,520	4·5	3,340	4·7	3,620
10	1·6	460	[illegible]·0	1,570	4·4	3,210	5·35	4,580
11	1·5	400	2·7	1,270	4·2	2,950	5·35	4,580
12	2·3	935	2·95	1,520	4·2	2,950	5·6	4,960
13	1·6	460	3·2	1,770	5·05	4,120	5·9	5,450
14	1·6	460	3·4	1,990	5·2	4,350	6·50	6,460
15	2·0	720	3·4	1,990	5·25	4,420	6·50	6,460
16	2·9	1,470	3·4	1,990	5·10	4,200	6·60	6,630
17	1·8	585	3·35	1,940	5·05	4,120	6·70	6,810
18	1·65	490	3·5	2,100	4·75	3,690	6·70	6,810
19	1·75	552	3·2	1,770	4·85	3,830	6·40	6,290
20	1·85	618	3·1	1,670	4·65	3,550	6·30	6,120
21	1·85	618	3·1	1,670	5·1	4,200	5·50	4,800
22	1·8	585	3·1	1,670	5·25	4,425	4·95	3,980
23	1·8	585	3·1	1,670	5·5	4,800	4·70	3,620
24	1·7	520	3·2	1,770	5·55	4,880	4·60	3,480
25	1·7	520	3·35	1,940	5·50	4,800	4·70	3,620
26	1·7	520	3·35	1,940	5·20	4,350	5·70	5,120
27	1·7	520	3·45	2,040	5·00	4,050	5·50	4,800
28	1·7	520	3·45	2,040	4·80	3,760	5·50	4,800
29	1·7	520	3·5	2,100	4·45	3,280	5·50	4,800
30	1·7	520	3·65	2,280	4·15	3,880	5·90	5,450
31	1·7	520	......	....	4·50	3,340	......	......

DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Revelstoke, for 1914.

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5·9	5,450	4·9	3,900	3·40	1,990	2·9	1,470	2·4	1,010	1·30	290
2	6·45	6,380	4·75	3,690	3·25	1,820	2·8	1,370	2·4	1,010	1·40	340
3	6·8	6,990	5·05	4,120	3·25	1,820	2·6	1,180	2·2	860	1·40	340
4	6·9	7,170	4·6	3,480	3·45	2,040	2·40	1,010	2·4	1,010	1·50	400
5	6·95	7,260	4·6	3,480	3·70	2,340	2·30	935	2·4	1,010	1·40	340
6	6·5	6,460	4·6	3,480	3·45	2,040	2·25	900	2·15	825	1·6	460
7	6·25	6,040	4·4	3,210	3·25	1,820	2·20	860	2·2	860	1·6	460
8	5·75	5,200	3·65	2,280	3·40	1,990	2·30	935	2·4	1,010	Frozen	
9	5·8	5,280	3·4	1,990	2·90	1,470	2·25	900	2·2	860		
10	5·95	5,540	3·6	2,220	2·70	1,270	2·30	935	2·1	790		
11	6·25	6,040	3·8	2,460	2·65	1,220	2·2	860	2·00	720		
12	6·4	6,290	4·0	2,700	2·70	1,270	2·2	860	2·00	720		
13	6·3	6,120	4·25	3,020	2·40	1,010	2·1	790	2·00	720		
14	6·4	6,290	4·0	2,700	2·30	935	2·1	790	1·90	650		
15	6·7	6,810	4·1	2,820	2·10	790	2·2	860	1·70	520		
16	5·4	4,650	4·05	2,760	2·10	790	2·1	790	1·90	650		
17	5·05	4,120	3·85	2,520	1·90	650	2·5	1,090	1·70	520		
18	5·3	4,500	4·05	2,760	2·50	1,090	2·3	935	1·70	520		
19	5·35	4,580	4·05	2,760	2·50	1,090	2·2	860	1·70	520		
20	5·45	4,720	3·90	2,580	2·10	790	2·1	790	1·90	650		
21	5·2	4,350	4·10	2,820	2·35	970	2·25	898	1·80	585		
22	4·45	3,280	4·10	2,820	2·40	1,010	2·1	790	1·80	585		
23	4·15	2,880	4·10	2,820	2·40	1,010	2·0	720	1·30	290		
24	4·4	3,210	3·55	2,160	2·65	1,220	2·1	790	1·65	490		
25	4·5	3,340	3·80	2,460	2·7	1,270	2·0	720	1·80	585		
26	4·1	2,820	3·90	2,580	2·9	1,470	1·7	520	1·90	650		
27	4·1	2,820	3·95	2,640	2·9	1,470	1·8	585	1·80	585		
28	4·15	2,880	3·80	2,460	2·9	1,470	1·8	585	1·80	585		
29	4·5	3,340	3·45	2,040	2·8	1,370	1·7	520	1·70	520		
30	4·5	3,340	3·50	2,100	2·5	1,090	1·7	520	1·70	520		
31	4·75	3,690	3·45	2,040	....	......	2·4	1,010	.			

MONTHLY DISCHARGE of Illecillewaet River, near Revelstoke, for 1914.

(Drainage area, 480 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accuracy.
	Maximum.	Miminum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
March	1,470	....	545	1·13	1·30	33,500	
April	2,280	400	1,550	3·23	3·60	92,200	C
May	4,880	2,460	3,790	7·90	9·11	233,000	B
June	6,900	3,340	5,100	10·6	11·8	303,000	B
July	7,260	2,820	4,900	10·2	11·8	301,000	B
August	4,120	1,990	2,770	5·77	6·65	170,000	B
September	2,340	650	1,350	2·81	3·14	80,300	B
October	1,470	520	867	1·80	2·08	53,300	B
November	1,010	290	694	1·45	1·62	41,300	B

INCOMAPPLEUX RIVER NEAR BEATON (ALSO CALLED FISH CREEK) (3030).

Location.—Immediately outside the southern limit of the Railway Belt, 2 miles from the mouth, near Beaton, on the northeast arm, Arrow lakes, Revelstoke district.

Records Available.—May to December, 1914.

Climatic Conditions.—The precipitation is similar at the mouth to that of Revelstoke. The snowfall is very heavy in the hills. The river is glacial fed. The winters are not very severe, as low as 10° F. Frazil ice may be expected. The summers are hot.

Gauge.—A chain gauge located near his ranch is read daily by Mr. Jas. Burbridge.

Channel.—At the gauge the water is fast, the control has not been studied. The measuring section is satisfactory.

Discharge Measurements.—Six well-distributed measurements were made in 1914.

Accuracy.—The measurements should be fairly accurate, the gauge readings are daily but the gauge is not very reliable.

General.—The Incomappleux river is a stream about 42 miles long. It has its source in the Selkirks behind Glacier, from mountains 8,000 to 10,000 feet high. It flows through a heavily timbered country in which extensive limits are held by the Arrow Lake Lumber Company and the Dominion Saw-mills. There is practically no agricultural land in the whole valley. There are several mining claims, particularly around Cambourne, about 5 miles from the mouth. The stream is swift, from 50 to 100 feet wide, and from 3 feet to 10 feet in depth. The river is not navigable, but is suitable for logging purposes.

Incomappleux River.

General Power Possibilities.—There is a canyon on this river about 22 miles from the mouth. This canyon is about 3,000 feet long, and in it there is a fall of 100 feet. The width varies from 60 to 100 feet at the bottom, and the walls, which are of a broken rock formation, are high and steep.

There is very little natural storage, so, for a large development, artificial storage is required. By installing a very high dam (200 to 400 ft.) at a point in the canyon where the desired rock formation may be obtained, water could be penned back over a large flat on which lies the old townsite of Camborne. With a head of 300 feet and this storage, a probable 24-hour, 12-months development of 30,000 H.P. could be obtained. This would be an expensive installation.

Small summer industrial power of from 100 to 300 H.P. may be obtained on the following tributaries:—

- Sable creek
- Pool creek
- Lexington creek
- Boyd creek

The flow in each case is small but high heads may be obtained.

DISCHARGE MEASUREMENTS of Incomappleux River, near Beaton, B.C., for 1914.

Date.	Hydrographer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 21....	J. A. Elliott ..	1672	96	763	4·46	4·8	3,410
June 19 ..	G. K. B. ..	1927	96	973	5·41	6·1	5,360
June 27. .	J. A. E...	1909	98	902	6·11	5·6	5,520
Sept. 4.....	"	1927	98	752	4·01	4·15	3,020
Oct. 27 ...	"	1909	91	564	1·65	2·8	935
Nov. 20 ..	"	1909	92	490	1·57	2·6	768

Fol. 847

DAILY GAUGE HEIGHT AND DISCHARGE of Incomappleux River, near Beaton, for 1914.

DAY.	April.		May.		June.	
	Gauge Height	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	......	......	4·2	2,750	5·65	4,030
2	......	......	4·8	3,630	5·80	5,340
3	......	......	5·25	4,370	6·90	7,360
4	......	......	4·45	3,100	6·70	6,980
5	......	......	4·25	2,820	5·70	5,160
6	......	......	4·05	2,540	5·15	4,200
7	......	......	4·0	2,470	4·70	3,470
8	......	......	4·0	2,470	4·45	3,100
9	......	......	4·5	3,170	4·50	3,170
10	......	......	4·45	3,100	4·65	3,390
11	......	......	4·5	3,170	4·90	3,790
12	......	......	4·7	3,470	5·30	4,460
13	......	......	4·9	3,790	5·65	5,070
14	......	......	5·2	4,290	6·30	6,240
15	......	......	5·2	4,290	6·75	7,070
16			5·3	4,460	6·7	6,980
17			5·1	4,120	6·95	7,460
18			4·85	3,710	7·0	7,560
19			4·65	3,390	6·55	6,690
20			4·55	3,240	5·95	5,610
21	3·6	1,930	4·75	3,550	5·35	4,540
22	3·55	1,860	5·05	4,030	5·05	4,030
23	3·5	1,800	5·35	4,540	4·75	3,550
24	3·6	1,930	5·45	4,710	4·65	3,390
25	3·65	2,000	5·35	4,540	4·90	3,790
26	3·60	1,930	4·95	3,870	5·50	4,800
27	3·65	2,000	4·55	3,240	5·55	4,890
28	3·7	2,060	4·3	2,890	5·45	4,710
29	3·7	2,060	4·1	2,610	5·50	4,800
30	3·9	2,330	4·1	2,610	5·90	5,520
31	...		4·35	2,960		

DAILY GAUGE HEIGHT AND DISCHARGE of Incomappleux, River near Beaton, for 1914—*Concluded.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height.	Discharge.	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	6·4	6,420	5·8	5,340	3·80	2,190	3·85	2,260	3·35	1,620	2·5	690
2	6·95	7,460	5·75	5,250	3·85	2,260	3·75	2,120	3·45	1,740	2·5	690
3	7·45	8,430	5·75	5,250	4·10	2,610	3·50	1,800	3·3	1,560	2·4	595
4	7·45	8,430	5·3	4,460	4·35	2,960	3·55	1,620	3·3	1,560	2·4	595
5	7·55	8,630	4·95	3,870	3·95	2,400	3·25	1,500	3·25	1,500	2·4	595
6	7·25	8,030	5·35	4,540	3·65	2,000	3·20	1,440	3·15	1,380	2·3	510
7	6·9	7,360	5·15	4,200	3·85	2,260	3·20	1,440	3·1	1,320	2·2	435
8	6·55	6,690	4·35	2,960	4·15	2,680	3·20	1,440	3·1	1,320	2·2	435
9	6·35	6,330	4·0	2,470	3·65	2,000	3·15	1,380	3·05	1,260	2·1	375
10	6·55	6,690	4·35	2,960	3·40	1,680	3·05	1,260	3·0	1,200	2·1	375
11	6·75	7,070	4·[illegible]4	2,680	3·75	2,120	3·05	1,260	3·0	1,200	2·0	325
12	7·35	8,230	4·45	3,100	3·35	1,620	3·0	1,200	2·9	1,090	2·0	325
13	7·25	8,030	4·65	3,390	3·15	1,380	2·95	1,140	2·9	1,090	1·9	320
14	7·10	7,750	4·85	3,710	3·10	1,320	2·85	1,040	2·8	990	2·1	320
15	7·55	8,630	4·9	3,790	3·05	1,260	2·9	1,090	2·8	990	Frozen.	320
16	5·80	5,340	4·75	3,550	2·95	1,140	3·05	1,260	2·6	790		320
17	5·35	4,540	4·8	3,630	2·90	1,090	3·5	1,800	2·6	790		320
18	5·75	5,250	4·55	3,240	3·40	1,680	3·4	1,680	2·6	790		320
19	6·15	5,970	4·65	3,390	3·90	2,330	3·35	1,620	2·6	790		320
20	6·15	5,970	5·05	4,030	3·40	1,680	3·25	1,500	2·6	790		320
21	5·05	4,030	4·9	3,790	3·25	1,500	3·05	1,260	2·6	790		320
22	4·5	3,170	4·8	3,630	3·10	1,320	2·9	1,090	2·6	790		320
23	4·45	3,100	4·10	2,610	3·15	1,380	2·9	1,090	2·6	790		320
24	4·9	3,790	4·10	2,610	3·35	1,620	2·85	1,040	2·6	790		320
25	4·85	3,710	4·10	2,610	3·45	1,740	2·8	990	2·6	790		320
26	4·5	3,170	4·20	2,750	3·70	2,060	2·8	990	2·7	890		320
27	4·4	3,030	4·30	2,890	4·35	2,960	2·8	990	2·7	890		[illegible]
28	4·65	3,390	4·40	3,030	3·65	2,000	2·75	940	2·7	890		[illegible]
29	4·55	3,240	4·20	2,750	3·45	1,740	2·7	890	2·6	790		[illegible]
30	5·1	4,120	4·20	2,750	3·45	1,740	3·15	1,380	2·6	790		320
31	5·65	5,070	3·85	2,260			[illegible]·25	1,500	......	......		[illegible]

MONTHLY DISCHARGE of Incomappleux River, near Beaton, for 1914.

(Drainage area 460 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage [illegible]	Total in acre-feet.	Accura
May	4,710	2,470	3,480	7·56	8·72	214,000	B
June	7,560	3,100	5,040	10·9	12·2	300,000	C
July	8,630	3,030	5,840	12·7	14·6	359,000	C
August	5,340	2,260	3,470	7·54	8·69	213,000	B
September	2,960	1,090	1,890	4·10	4·57	112,000	B
October	2,260	890	1,360	2,96	3·41	83,600	B
November	1,740	790	1,060	2·30	2·57	63,100	B
December	690	......	400	0·87	1·00	24,600	

KICKING HORSE RIVER NEAR GOLDEN (3011).

Location.—In NE. ¼, section 12, township 27, range 22, west 5th, on traf bridge, in the town of Golden, Revelstoke district.

Records Available.—Open season, 1912, 1913, and 1914. Metering unc ice conditions, February 22, 1912, 172 c.f.s. Metering under ice conditio February 28, 1914, 276 c.f.s.

Climatic Conditions.—The precipitation at Golden, from December 1, 1913, to November 30, 1914, amounted to about 14 inches. This may be considered lighter than usual. The snowfall was 3 or 4 feet. The summers are hot and quite dry, while the winters are very severe, the temperature, some seasons, going down to —50° F. for a night. Frazil ice will be found in the Kicking Horse at this point, as well as practically up to its source.

Gauge.—A vertical staff gauge is used, and read two or three times daily by Mr. W. Wenman, of Golden

Channel.—Straight for 200 yards above and below the station. Control is a sand bar about 100 yards down stream from section.

Discharge Measurements.—Ten were made in 1911-12, five in 1913, and six in 1914.

Accuracy.—The channel has shifted slightly since 1913, and a new curve was plotted for 1914. The measurements are accurate, the curve only fair, and the gauge readings are very reliable. The results should be within 10 per cent.

DISCHARGE MEASUREMENTS of Kicking Horse River, near Golden, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft	Ft. per sec.	Feet.	Sec.-ft.
Feb. 28	C. E. Webb	1,048	126	283·6	0·98	....	2,780[1]
June 11	J. A. E.	1,909	180	644·0	5·51	4·25	3,550
July 28	"	1,909	155	605·0	5·12	4·10	3,100
Aug. 6	"	1,909	155	692·0	5·94	4·50	4,110
Sept. 11	"	1,927	98	391·0	3·30	2·9	1,290
Oct. 14	C. E. R.	1,929	81	329·0	2·77	2·32	912

[1] Not very reliable. Frazil ice.

DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near Golden, for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			2·58	1,040	4·15	3,350
2			2·85	1,280	4·70	4,630
3			3·2	1,660	5·50	6,620
4			2·95	1,380	5·85	7,570
5			2·75	1,200	5·25	5,990
6			2·65	1,100	4·85	4,990
7			2·6	1,060	4·50	4,150
8			2·65	1,100	4·30	3,680
9			2·95	1,380	4·20	3,460
10			3·07	1,510	4·15	3,350
11			3·17	1,620	4·30	3,680
12			3·2	1,660	4·60	4,390
13			3·4	1,950	4·90	5,110
14			3·65	2,360	5·25	5,990
15			4·0	3,030	5·55	6,750
16	1·9	550	4·2	3,460	5·85	7,570
17	1·92	563	4·15	3,350	6·17	8,510
18	1·78	474	4·02	3,070	6·05	8,150
19	1·95	582	3·83	2,690	5·9	7,710
20	2·05	648	3·8	2,630	5·45	6,500
21	1·9	550	3·67	2,390	5·0	5,350
22	2·02	628	3·75	2,540	4·7	4,630
23	1·91	556	4·05	3,130	4·25	3,570
24	2·1	680	4·25	3,570	4·0	3,030
25	2·02	628	4·35	3,800	4·15	3,350
26	2·0	615	4·1	3,240	4·57	4,330
27	2·0	615	3·85	2,720	4·4	3,910
28	2·0	615	3·7	2,440	4·52	4,200
29	2·08	667	3·6	2,270	4·65	4,510
30	2·21	762	3·4	1,950	4·90	5,110
31	. . .		3·65	2,[illegible]		

DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near Golden, for 1914—*Concluded.*

DAY.	July		August		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft.
1	5·3	6,120	4·61	4,410	3·65	2,360	3·08	1,520	2·0	615	1·60	370
2	5·67	7,070	4·61	4,410	3·70	2,440	3·05	1,480	2·05	647	1·60	370
3	5·8	7,430	4·75	4,750	3·70	2,440	2·90	1,330	2·0	615	1·80	485
4	5·97	7,910	4·55	4,270	3·[illegible]	2,630	2·90	1,330	2·0	615	1·63	418
5	5·9	7,710	4·35	3,800	3·60	2,270	2·79	1,230	2·0	615	1·52	330
6	5·9	7,710	4·5	4,150	3·20	1,660	2·60	1,060	1·95	582	1·62	382
7	5·7	7,150	4·55	4,270	3·37	1,900	2·60	1,060	1·9	550	1·56	[illegible]
8	5·4	6,370	3·97	2,970	3·51	2,120	2·50	980	1·87	530	1·4	280
9	5·3	6,120	3·75	2,540	3·15	1,600	2·75	1,200	1·9	550	Ice	[illegible]
10	5·2	5,860	3·57	2,220	2·80	1,240	2·70	1,150	1·85	517		[illegible]
11	5·35	6,240	3·6	2,270	2·80	1,240	2·5	980	1·85	517		210
12	5·35	6,240	3·82	2,670	2·77	1,210	2·52	996	1·85	517		200
13	5·75	7,290	4·02	3,070	2·57	1,040	2·4	900	1·8	485		200
14	5·67	7,070	4·2	3,460	2·50	980	2·35	865	1·72	441		200
15	5·65	7,020	3·9	2,820	2·45	940	2·35	865	1·45	300		[illegible]
16	5·07	5,520	3·94	2,900	2·40	900	2·35	865	1·14	185		200
17	4·85	4,990	3·96	2,950	2·30	830	2·35	865	1·35	260		[illegible]
18	4·95	5,230	3·9	2,820	2·45	940	2·35	865	1·5	320		200
19	4·89	5,090	3·8	2,630	3·35	1,880	2·35	865	1·5	320		200
20	5·2	5,860	4·1	3,240	2·85	1,280	2·35	865	1·5	320		200
21	4·78	4,820	4·14	3,330	2·45	940	2·31	837	1·6	370		200
22	4·27	3,610	4·27	3,610	2·50	980	2·10	680	1·75	458		200
23	4·05	3,140	4·00	3,030	2·50	980	2·10	680	1·75	458		200
24	4·25	3,570	3·75	2,540	2·52	996	2·07	660	1·75	458		[illegible]
25	4·27	3,610	3·50	2,100	2·70	1,150	2·02	628	1·67	412		200
26	4·1	3,240	3·75	2,540	3·05	1,480	2·0	615	1·65	400		200
27	4·02	3,070	3·94	2,900	3·60	2,270	2·0	615	1·65	400		200
28	4·02	3,070	3·88	2,780	3·25	1,730	1·95	582	1·65	400		200
29	4·27	3,610	4·00	3,030	3·20	1,660	1·94	576	1·62	382	...	200
30	4·25	3,570	3·88	2,780	2·95	1,380	1·92	563	1·62	382		200
31	4·46	4,110	3·75	2,540			2·0	615				200

MONTHLY DISCHARGE of Kicking Horse River, near Golden, for 1914.

(Drainage area, 700 square miles.)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF.	
	Maximum	Minimum.	Mean	Per Square Mile	Depth in inches on Drainage Area.	Total in Acre-feet.
May	3,800	1,040	2,220	3·17	3·66	136,000
June	8,510	3,030	5,140	7·34	8·19	306,000
July	7,910	3,070	5,460	7·80	8·99	336,000
August	4,750	2,100	3,160	4·51	5·20	194,000
September	2,630	830	1,480	2·11	2·35	88,100
October	1,520	563	914	1·30	1·50	56,200
November	647	185	454	0·65	0·72	27,000
December	485		248	0·35	0·40	15,200

Accuracy "B".

KICKING HORSE RIVER, NEAR FIELD (3012).

Location.—In township 28, range 18, west 5th, below the mouth of Yoho river, on the first traffic bridge, 3¼ miles east of Field. Revelstoke district.

Records Available.—June to November, 1912 and 1913; June to December, 1914.

Climatic Conditions.—The precipitation at Field is considerably greater than at Golden, (see Kicking Horse, near Golden), but much less than at Glacier, (see Illecillewaet river, near Glacier). The summers are short, with some very hot days, and nights generally cool. The rainfall in the summer months varies greatly, but is generally much less in July and August than in June. The winters are cold, with occasional severe storms, as low as 50°F. some seasons. The river near Field is generally frozen for three or four months, and frazil ice is always to be contended with.

Gauge.—A chain gauge is used, and read three times a week by Mr. Alex. Stuart, of Field.

Channel.—The channel is straight for 50 yards above and below the station, the water is very swift during freshet, the control is fairly permanent, but shifted slightly in 1914.

Discharge Measurements.—Eight well-distributed measurements in 1912, eight in 1913, and five in 1914, were made from the traffic bridge above-mentioned.

Accuracy.—A slight shift in the channel was noted, but the 1912 curve was still used. The gauge is read only two or three times a week, and during the summer the data cannot be guaranteed within 20 per cent. Later in the fall the results should be within 15 per cent.

DISCHARGE MEASUREMENTS of Kicking Horse River, near Field, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft per sec.	Feet.	Sec.-ft
June 14	J. A. E.	1,909	72	218	6·41	5·6	1,4
Sept. 21	C. E. R.	1,927	55	116	2·35	4·10	27
Oct. 16	J. A. E.	1,909	52	103	1·93	3·65	[illegible]
Sept. 12	"	1,927	60	137	2·84	4·3	[illegible]
July 29	"	1,909	75	227	6·49	5·5	1,47

DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near Field, for 1914.

Day	June	
	Gauge Height	Discharge.
	Feet	Sec.-ft.
1		1,820
2		1,880
3		1,940
4	6·0	1,940
5	6·10	2,100
6	6·0	1,940
7		1,880
8		1,820
9		1,760
10		1,700
11		1,650
12		1,590
13		1,530
14	5·7	1,470
15		1,745
16	6·15	2,180
17		2,120
18		2,080
19	6·05	2,020
20	.	1,510
21	5·45	1,110
22		838
23	4·9	560
24	. .	580
25		600
26	5·0	625
27		668
28	5·1	710
29		1,090
30	5·7	1,470
31	....	..

DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near Field, for 1914—(*Con.*)

Day	July		August.		September		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		1,860		2,530	5·50	1,180		260	3·4	140	3·1	110
2	6·2	2,260	6·45	2,660	5·50	1,180		245		135		110
3	6·55	2,840	6·2	2,260	5·55	1,250		230	3·3	130	3·1	110
4	6·6	2,920	6·3	2,420	5·50	1,180	2·90	215		130		110
5	6·45	2,660		2,260		1,020	3·90	215	3·3	130		110
6	6·5	2,730	6·1	2,100	5·25	862		215	3·3	130		110
7	6·55	2,840	5·9	1,780	5·45	1,110	3·90	215		130		110
8	6·25	2,340		1,352		770	4·20	275	3·3	130		110
9	6·25	2,340	5·3	925	4·65	425	4·15	265		130		110
10	6·3	2,420		1,050	4·45	345		240	3·3	130		110
11		2,700	5·5	1,180	4·40	330		220		125		110
12		2,980	5·6	1,320		292	3·8	200	3·2	120		110
13	6·8	3,200		1,630	4·10	255	3·75	192	3·2	120		110
14	6·8	3,200	6·0	1,940	4·55	380		200		130		110
15	6·7	3,000		1,700		298	3·85	208		139		110
16		2,680	5·7	1,470	3·90	215	3·8	200	3·45	148		110
17	6·2	2,260	5·7	1,470	3·75	192		192		144		110
18		2,420	5·7	1,470	3·95	225	3·7	185	3·4	140		110
19	6·4	2,580		1,660		220		178		135		110
20	6·4	2,580	5·95	1,860		214	3·6	170	3·3	130		110
21		1,950	5·9	1,780	3·85	208		159		125		110
22	5·6	1,320		1,620	3·80	200	3·45	148	3·2	120		110
23	5·4	1,050	5·7	1,470	3·80	200	3·45	148		115		110
24	5·6	1,320	5·45	1,110	4·00	238		148	3·1	110		110
25		1,250	5·55	1,250	4·20	275	3·45	148		110		110
26	5·5	1,180		1,350		290	3·4	140	3·1	110	3·1	110
27	5·5	1,180		1,450		300		135		110	3·0	100
28	5·5	1,180	5·75	1,550	4·35	315		130	3·1	110		100
29	5·8	1,620		1,450	4·30	300	3·25	123		110	3·0	100
30	6·2	2,260		1,360	4·20	275	3·35	135		110		100
31		2,400		1,270				138				100

MONTHLY DISCHARGE of Kicking Horse River at Field, for 1914.

(Drainage area, 130 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		ACCURAC
	Maximum	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.	
June	2,180	560	1,500	11·5	12·8	89,300	
July	3,260	1,050	2,250	17·3	19·9	138,000	
August	2,660	925	1,770	13·6	15·7	109,000	D
September	1,250	192	485	3·73	4·16	28,900	C
October	275	125	196	1·51	1·74	12,100	C
November	148	110	126	0·97	1·08	7,500	C
December	110	100	108	0·83	0·96	6,640	C

KICKING HORSE RIVER NEAR NO. 2 TUNNEL (3013).

Location.—In township 28, range 18, west 5th, above mouth of Yoho river, immediately above C.P.R. bridge over the Kicking Horse between Nos. 1 and 2 tunnels, 5 miles east of Field. Revelstoke district.

Records Available.—July to October, 1912; April, 1913, to December, 1914.

Climatic Conditions.—Similar to Field, with possibly a little more snow.

Gauge.—An enamel iron vertical staff gauge is used, and read twice daily by Mr. C. E. Hamilton, of Field. This gauge is situated immediately above C.P.R. bridge, between Nos. 1 and 2 tunnels.

Channel.—Channel is straight for 25 yards above and below the section. The control is not permanent.

Discharge Measurements.—Twelve measurements were made in 1912-13, and six in 1914. A shift occurred in 1914 and a new curve was plotted.

Accuracy.—The measuring section at high water is not very satisfactory. The control below the gauge is not permanent. The results, though probably within 20 to 25 per cent, are not guaranteed.

Discharge Measurements of Kicking Horse River, near No. 2 Tunnel, near Field, B.C., for 1914.

Date	Hydrographer.	Meter No.	Width	Area of Section	Mean Velocity.	Gauge Height	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 14	J. A. E.	1,909	24	69	5·84	3·40	[1]403
July 29	"	1,909	20	51·1	5·16	1·95	[1]264
Aug 7	"	1,909	18	57·8	5·16	2·15	[1]300
Sept 21	C. E. R.	1,927	57	39·2	2·76	1·20	[2]108
" 12	J. A. E.	1,927	14	28·6	3·19	1·20	[1]91·4
Oct 16	"	1,909	14	27·2	3·08	0·95	[1]83·8

[1]From C. P. R. bridge

[2]Wading, different section

Daily Gauge Height and Discharge of Kicking Horse, River near No. 2 Tunnel, near Field, B.C., for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1	0·8	23	0·8	23	0·7	15	0·7	15	1·4	90	2·25	216
2	0·8	23	0·8	23	0·7	15	0·7	15	1·4	90	2·55	266
2	0·8	23	0·8	23	0·7	15	0·7	15		103	3·50	440
4	0·8	23	0·8	23	0·7	15	0·7	15	1·6	116	3·65	469
5	0·8	23	0·8	23	0·7	15	0·7	15	1·5	103	3·10	365
6	0·8	23	0·8	23	0·7	15	0·7	15	1·5	103	2·8	[illegible]
7	0·8	23	0·8	23	0·7	15	0·7	15	1·4	90	2·60	275
8	0·8	23	0·8	23	0·7	15	0·7	15	1·5	103	2·40	241
9	0·8	23	0·8	23	0·7	15	0·7	15	1·6	116	2·30	224
10	0·8	23	0·8	23	0·7	15	0·75	19	1·6	116	2·20	207
11	0·8	23	0·8	23	0·7	15	0·8	23	1·7	130	2·30	224
12	0·8	23	0·8	23	0·7	15	0·8	23	1·7	130	2·55	266
13	0·8	23	0·8	23	0·7	15	0·8	23	1·8	145	2·95	338
14	0·8	23	0·8	23	0·7	15	0·8	23	1·95	168	3·45	430
15	0·8	23	0·7	15	0·7	15	0·8	23	2·1	191	3·85	508
16	0·8	23	0·7	15	0·7	15	0·8	23	2·2	207	3·95	528
17	0·8	23	0·7	15	0·7	15	0·85	28	2·2	207	4·00	537
18	0·8	23	0·7	15	0·7	15	0·9	32	2·1	191	3·50	440
19	0·8	23	0·7	15	0·7	15	0·9	32	2·0	175	3·30	403
20	0·8	23	0·7	15	0·7	15	0·9	32	2·0	175	2·90	329
21	0·8	23	0·7	15	0·7	15	0·9	32	1·9	160	2·55	266
22	0·8	23	0·7	15	0·7	15	0·9	32	1·95	168	2·25	216
23	0·8	23	0·7	15	0·7	15	0·9	32	2·15	199	2·0	175
24	0·8	23	0·7	15	0·7	15	0·9	32	2·25	216	1·8	145
25	0·8	23	0·7	15	0·7	15	1·0	42	2·4	241	1·9	160
26	0·8	23	0·7	15	0·7	15	1·0	42	2·3	224	2·05	183
27	0·8	23	0·7	15	0·7	15	1·1	53	2·1	191	2·05	183
28	0·8	23	0·7	15	0·7	15	1·1	53	1·95	168	2·1	191
29	0·8	23	..	..	0·7	15	1·15	59	1·8	145	2·3	224
30	0·8	23	..	..	0·7	15	1·3	77	1·75	138	2·65	284
31	0·8	23	...	...	0·7	15	....	....	1·85	152	..	...

Daily Gauge Height and Discharge of Kicking Horse River, near No. 2 Tunnel, Field, B.C., for 1914—*Concluded.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3·05	356	2·25	328	1·55	166	1·40	138	0·7	40	0·6	
2	3·3	403	2·35	356	1·45	147	1·40	138	0·7	40	0·6	31
3	3·5	440	2·35	356	1·45	147	1·30	121	0·7	40	0·6	31
4	3·5	440	2·4	367	1·45	147	1·30	121	0·7	40	0·6	31
5	3·25	394	2·1	290	1·45	147	1·20	105	0·7	40	0·6	31
6	3·2	384	2·1	290	1·30	121	1·20	105	0·7	40	0·6	31
7	3·1	365	2·15	312	1·30	121	1·15	98	0·6	31	0·6	31
8	2·9	329	1·95	254	1·30	121	1·25	113	0·6	31	0·6	31
9	2·85	320	1·7	197	1·30	121	1·30	121	0·6	31	0·6	31
10	3·05	356	1·55	166	1·20	105	1·25	113	0·6	31	0·6	31
11	3·05	356	1·6	176	1·25	113	1·1	90	0·6	31	0·6	31
12	3·2	384	1·6	176	1·20	105	1·1	90	0·6	31	0·6	31
13	3·4	421	1·7	197	1·10	90	1·1	90	0·6	31	0·6	31
14	3·35	412	1·8	219	1·10	90	1·0	76	0·6	31	0·6	31
15	3·35	412	1·8	219	1·00	76	1·0	76	0·6	31	0·6	31
16	2·75	302	1·75	208	1·00	76	1·0	76	0·6	31	0·6	31
17	2·45	250	1·75	208	0·90	63	1·0	76	0·6	31	0·6	31
18	2·45	250	1·75	208	0·90	63	1·0	76	0·6	31	0·6	31
19	2·65	284	1·75	208	1·20	105	1·0	76	0·6	31	0·6	31
20	3·00	347	1·85	230	1·25	113	0·9	63	0·6	31	0·5	24
21	2·40	367	1·9	242	1·25	113	0·9	63	0·6	31	0·5	24
22	2·05	278	2·1	290	1·20	105	0·8	51	0·6	31	0·4	19
23	1·85	230	1·9	242	1·15	98	0·8	51	0·6	31	0·4	19
24	1·90	242	1·75	208	1·30	121	0·8	51	0·6	31	0·4	19
25	2·00	265	1·7	197	1·30	121	0·8	51	0·6	31	0·4	19
26	1·95	254	1·7	197	1·45	147	0·8	51	0·6	31	0·4	19
27	1·85	230	1·7	197	1·85	230	0·8	51	0·6	31	0·4	19
28	1·9	242	1·7	197	1·65	186	0·7	40	0·6	31	0·4	19
29	1·95	254	1·7	197	1·45	147	0·7	40	0·6	31	0·4	19
30	1·95	254	1·70	197	1·40	138	0·7	40	0·6	31	0·4	19
31	2·25	328	1·65	186	.	..	0·7	40			0·4	19

Monthly Discharge of Kicking Horse River, near Field, B.C., for 1914.

(Drainage area, 50 square miles.) No. 2 Tunnel.

Month	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet.
January	23	23	23·0	0·46	0·53	1,410
February	23	15	19·0	0·38	0·40	1,060
March	15	15	15·0	0·30	0·35	922
April	77	15	29·0	0·58	0·65	1,730
May	241	90	153·0	3·06	3·53	9,410
June	537	145	302	6·04	6·74	18,000
July	440	230	328	6·56	7·56	20,200
August	367	166	236	4·72	5·44	14,500
September	230	63	121	2·42	2·70	7,200
October	138	40	83·5	1·67	1·92	5,130
November	40	31	32·8	0·66	0·74	1,950
December	31	19	26·7	0·53	0·61	1,640

No. 2 Creek, near Forster's Landing (3015).

Location.—No. 2 creek flows easterly into Columbia river from the Seikirk range, about 6 miles from Wilmer. The gauging station is located about 1 mile from the mouth, on the highway bridge on road from Wilmer to Forster's Landing.

Records Available.—June to October, 1912; May to October, 1913; April to November, 1914.

Climatic Conditions.—The precipitation at the mouth is similar to that at Wilmer, which from December 1, 1913, to November 30, 1914, was 15.5 inches. The summers are hot, cool nights, and very dry, almost semi-arid. The winters are about four and one-half months long, and, at times, very severe. In 1911 the temperature was as low as -33°F. Frazil ice is prevalent.

Gauge.—A staff gauge is used, and read by Mrs. Colin Mackay of Morinish Ranch, Wilmer.

Channel.—Not satisfactory. Water swift and broken. A new station has been established at the bridge on the upper road which will be used in 1915.

Discharge Measurements.—Four measurements were made in 1914, and thirteen in 1912 and 1913.

Accuracy.—Due to the poor section the measurements are not guaranteed.

Discharge Measurements of No. 2 Creek, near Forsters' Landing, for 1914.

Date.		Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1914.				Feet.	Sq. ft	Ft. per sec.	Feet.	Sec.-ft
May	4	D.O.B.G	1,048	35	69·8	5·25	0·25	366
June	19	J. A. E.	1,909	86·5	240	7·29	2·25	1,750
Aug	2	"	1,909	90·0	170	5·86	1·70	997
Oct	22[1]	"	1,909	33·0	79·2	2·07	1·0	164[1]

[1] New section

DAILY GAUGE HEIGHT AND DISCHARGE at No. 2 Creek, near Forster's Landing, for 1914.

Day.	April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	....	.....	0·0	216	0·8	530
2	.....	...	0·1	252	1·0	620
3	.....	.	0·3	328	1·6	967
4	......		0·2	290	2·0	1,380
5	...	......	0·2	290	1·5	895
6	...	.....	0·1	252	....	760
7	.	......	0·2	290	1·0	620
8	..	....	0·1	252	·9	574
9	.	.....	0·3	328	·8	530
10		....	0·3	328	·9	574
11	..	...	0·4	367	1·1	667
12	...	...	0·4	367	1·1	667
13	.....	.....	0·5	407	1·3	774
14		......	0·5	407	1·5	895
15	..	......	0·7	488	1·9	1,260
16	...	....	0·9	574	2·1	1,520
17	−0·2	145	0·8	530	2·4	1,980
18	−0·2	145	0·7	488	2·4	1,980
19	−0·2	145	0·7	488	2·0	1,380
20	−0·0	216	0·6	447	1·8	1,160
21	−0·1	180	0·6	447	1·6	967
22	−0·1	180	0·7	488	1·3	774
23	−0·1	180	0·7	488	1·1	667
24	−0·1	180	0·9	574	1·0	620
25	−0·1	180	1·0	620	1·3	774
26	−0·1	180	0·9	574	1·3	774
27	−0·1	180	0·7	488	1·3	774
28	−0·1	180	0·6	447	1·5	895
29	0·0	216	0·5	407	1·6	967
30	0·0	216	0·4	367	1·6	967
31	....	....	0·6	447	....	....

DAILY GAUGE HEIGHT AND DISCHARGE at No. 2 Creek, near Foster's Landing, for 1914.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·7	1,060	1·7	1,060	0·7	488	0·3	328	0·1	252		
2	2·0	1,380	1·7	1,060	0·7	488	0·25	309	0·2	290		
3	2·3	1,820	1·8	1,160	0·8	530	0·2	290		290		
4	2·7	2,500	1·8	1,160	0·9	574		290	0·2	290		
5	2·75	2,590	1·5	895	0·8	530		290		270		
6	3·0	3,640	1·4	830	0·6	447	0·2	290	0·1	252		
7	2·4	1,980	1·9	1,260	0·7	488	0·2	290	0·1	252		
8	2·2	1,670	1·3	774	0·8	530		290	0·1	252		
9	2·2	1,670	1·0	620	0·5	467		290	0·0	216		
10	2·1	1,520	1·0	620	0·5	407		290		216		
11	2·1	1,520	1·1	667	0·5	407	0·2	290		216		
12	2·4	1,980	1·2	720	0·4	387	0·1	252	0·0	216		
13	2·8	2,680	1·1	667	0·5	407	0·2	290		216		
14	2·9	2,860	1·1		0·3	328	0·2	290		216		
15	3·1	3,220	1·1	667	0·3	328	0·1	252	0·0	216		
16	2·1	1,520	1·2	720	0·2	290	0·2	290		216		
17	2·0	1,380	1·0	620	0·4	367	0·2	290	0·0	216		
18	2·0	1,380	1·0	620	0·8	530	0·2	290	0·0	216		
19	2·0	1,380	1·05	646	0·4	367	0·2	290		200		
20	2·1	1,520	1·1	667	0·3	328	0·2	290		200		
21	1·8	1,160	1·0	620	0·3	328	0·1	252		190		
22	1·4	830	1·1	667	0·3	328	0·1	252		180		
23	1·4	830	0·9	574	0·3	328	0·1	252		170		
24	1·5	895	0·9	574	0·5	407	0·1	252		160		
25	1·5	895	0·8	530	0·5	407	0·1	252		150		
26	1·4	830	0·95	597	0·5	407	0·1	252		145		
27	1·4	830	0·9	574	0·5	407	0·1	252		145		
28	1·5	895	1·1	667	0·5	407	0·1	252		145		
29	1·4	830	0·9	574	0·5	467	0·1	252		145		
30	1·4	830	1·0	620	0·3	328	0·1	252		145		
31	1·7	1,060	0·8	530	......	..	0·2	290				

MONTHLY DISCHARGE of No. 2 Creek, near Forster's Landing, for 1914.

(Drainage area, 120 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF	
	Maximum.	Minimum	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
April	216	....	151	1·26	1·41	8,9
May	620	216	411	3·42	3·94	25,3
June	1,980	530	930	7·75	8·65	55,3
July	3,220	830	1,570	13·1	15·1	96,5
August	1,260	530	730	6·08	7·01	44
September	574	290	412	3·43	3·83	24,
October	328	252	277	2·31	2·66	17
November	290	....	206	1·72	1·92	12

SINCLAIR CREEK, NEAR SINCLAIR (3034).

Location.—At highway bridge on Golden to Windermere road. About 1 mile from mouth. Revelstoke district.

Records Available.—July 20 to December 31, 1914.

Climatic Conditions.—Summer is hot, with cool nights. Slightly more precipitation than at Invermere. The winter is of about four and one-half month's duration. Minimum temperature is as low as -40°F. The creek seldom freezes over.

Gauge.—Vertical staff gauge, read by Mr. J. A. McCullough.

Channel.—Sandy and shifting. Several shifts occurred from April to July, 1914.

Discharge Measurements.—Eight measurements were made in 1914.

Co-operation.—This station was maintained in 1914 by co-operation between the British Columbia Hydrographic Survey and the Provincial Water Rights Branch.

Accuracy.—Owing to serious shifts in the channel the data cannot be guaranteed.

General.—Sinclair creek rises in the westerly slope of the Rockies and flows through Sinclair pass to Columbia river, into which it empties about 12 miles below Windermere lake. About 2½ miles above the mouth it receives the waters of the Sinclair Hot Springs, which have a warming influence upon it. The use of the water of Sinclair creek is practically confined to irrigation. The drainage area is 30 square miles.

DISCHARGE MEASUREMENTS of Sinclair Creek, near Sinclair, B.C., for 1914.

Date	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 18	O. J. B. (Prov.)	. .	16·0	16·90	1·72	1·02	29·00
May 5	D. O. B. G.	1048	16·0	26·7	3·60	1·45	96·20
May 25	J. K. B. (Prov.)		16·0	27·5[1]	4·93	1·70	135·80
June 25	J. A. E.	1909	18·0	34·0	4·21	2·45	143·00
July 21	O. J. B.		16·0	21·37	2·42	1·90	51·50
Aug. 3	J. A. E.	1909	16·0	18·90	2·07	1·80	39·30
Aug. 24	J. K. B. (Prov.)	. . .	16·0	16·72	1·80	1·62	30·10
Sept. 21	do do	. . . . .	16·7	17·84	2·04	1·74	36·40
Sept. 28	O. J. B. (Prov.)	. . . .	16·0	17·77	1·80	1·76	32·10

---

[1] Marked shift in channel between April and July

DAILY GAUGE HEIGHT AND DISCHARGE of Sinclair Creek, near Sinclair, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	....	....	1·8	40·0	1·6	27·0	1·7	33·2	1·65	30·1	1·5	21·3
2	....	....	1·7	33·2	1·6	27·0	1·7	33·2	1·67	31·5	1·5	21·3
3	....	....	1·8	40·0	1·5	21·3	1·7	33·2	1·67	31·5	1·5	21·3
4	....	....	1·8	40·0	1·5	21·3	1·7	33·2	1·67	31·5	1·5	21·3
5	....	....	1·8	40·0	1·5	21·3	1·7	33·2	1·67	31·5	1·5	21·3
6	....	....	1·7	33·2	1·5	21·3	1·7	33·2	1·67	31·5	1·5	21·3
7	....	....	1·8	40·0	1·5	21·3	1·7	33·2	1·67	31·5	1·5	21·3
8	....	....	1·8	40·0	1·6	27·0	1·7	33·2	1·67	31·5	1·5	21·3
9	....	....	1·7	33·2	1·6	27·0	1·7	33·2	1·67	31·5	1·5	21·3
10	....	....	1·7	33·2	1·5	21·3	1·7	33·2	1·67	31·5	1·5	21·3
11	....	....	1·7	33·2	1·5	21·3	1·7	33·2	1·67	31·5	1·5	21·3
12	....	....	1·7	33·2	1·5	21·3	1·7	33·2	1·67	31·5	1·5	21·3
13	....	....	1·7	35·2	1·5	21·3	1·7	33·2	1·67	31·5	1·5	21·3
14	....	....	1·7	33·2	1·5	21·3	1·7	33·2	1·65	30·1	1·5	21·3
15	....	....	1·7	33·2	1·5	21·3	1·7	33·2	1·65	30·1	1·5	21·3
16	....	....	1·7	33·2	1·6	27·0	1·7	33·2	1·65	30·1	1·5	21·3
17	....	....	1·6	27·0	1·6	27·0	1·7	33·2	1·65	30·1	1·5	21·3
18	....	....	1·6	27·0	1·6	27·0	1·7	33·2	1·65	30·1	1·5	21·3
19	2·0	55·8	1·6	27·0	1·6	27·0	1·7	33·2	1·60	27·0	1·4	16·6
20	2·0	55·8	1·6	27·0	1·6	27·0	1·7	33·2	1·60	27·0	1·4	16·6
21	2·0	55·8	1·6	27·0	1·7	33·2	1·7	33·2	1·60	27·0	1·4	16·6
22	2·0	55·8	1·6	27·0	1·7	33·2	1·7	33·2	1·6	27·0	1·4	16·6
23	2·0	55·8	1·6	27·0	1·7	33·2	1·7	33·2	1·6	27·0	1·4	16·6
24	2·0	55·8	1·6	27·0	1·7	33·2	1·65	30·1	1·6	27·0	1·4	16·6
25	2·0	55·8	1·6	27·0	1·8	40·0	1·65	30·1	1·6	27·0	1·4	16·6
26	1·9	47·5	1·6	27·0	1·8	40·0	1·65	30·1	1·6	27·0	1·4	16·6
27	1·9	47·5	1·6	27·0	1·8	40·0	1·65	30·1	1·6	27·0	1·4	16·6
28	1·8	40·0	1·6	27·0	1·75	36·6	1·65	30·1	1·5	21·3	1·4	16·6
29	1·8	40·0	1·6	27·0	1·7	33·2	1·65	30·1	1·5	21·3	1·4	16·6
30	1·8	40·0	1·6	27·0	1·7	33·2	1·65	30·1	1·5	21·3	1·4	16·6
31	1·8	40·0	1·6	27·0	....	....	1·65	30·1	....	....	1·4	16·6

MONTHLY DISCHARGE of Sinclair Creek, near Sinclair, for 1914.

(Drainage area, 30 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage [illegible]	Total in acre-feet.
August	40	27	31·5	1·05	1·21	1,940
September	40	21·3	27·8	0·93	1·04	1,650
October	33·2	30·1	32·4	1·08	1·24	1,990
November	31·5	21·3	38·8	0·96	1·07	1,710
December	21·3	16·6	19·3	0·64	0·74	1,190

SPILLIMACHEEN RIVER, NEAR SPILLIMACHEEN (3019).

Location.—The station is located at highway bridge near mouth, about 4 miles from Spillimacheen. Revelstoke district.

Records Available.—June to October, 1912; June to November, 1913: April to December, 1914.

Climatic Conditions.—The summer is generally hot and dry with cold nights. Winter is about four and a half months' duration, heavy snowfall and low temperatures (-40° F.). The river is generally frozen from November to April.

Gauge.—Vertical staff enamel gauge is used, and read two or three times a week by Mr. Jas. Montgomery.

Channel.—The channel is straight above and below the section for 50 yards. The control is a gravel bar, and there is a pronounced riffle at low water, 25 yards below the section.

Discharge Measurements.—Measurements are made from the downstream side of the highway bridge. In 1912, six measurements were made; in 1913, eight; and in 1914, three.

Accuracy.—Gauge readings are infrequent, the measuring section is good, there is a possibility of backwater from the Columbia at high water. These results should be within 10 per cent.

DISCHARGE MEASUREMENTS of Spillimacheen River near Spillimacheen Landing, for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq ft.	Ft. per sec.	Feet.	Sec.-ft.
June 17	J. A. E	1909	135	670	8·88	3·3	5,920
July 31.....	"	1909	124	585	5·84	2·45	3,430
Oct. 23...	"	1909	114	374	1·28	0·40	480

DAILY GAUGE HEIGHT AND DISCHARGE of Spillimacheen River, near Spillimacheen, for 1914.

Day.	April.		May		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec. ft
1	−0·2	200	......	1,390	1·8	2,100
2	−0·2	200	1·8	2,100	....	3,000
3	−0·2	200	2·0	2,500	3·1	5,400
4	−0·2	200		2,100	.	4,500
5	−0·2	200		1,450	...	3,720
6		200	1·4	1,450	2·2	2,980
7		325		1,590		2,980
8	0·1	325		1,750	2·2	2,980
9		325	1·75	2,010		2,860
10		325	1·8	2,100	2·1	2,750
11	0·1	325		2,100		2,980
12	0·1	325		2,200		3,220
13		375	1·85	2,200	2·4	3,480
14		425		2,360	2·9	4,780
15	0·4	500		2,500		5,330
16		500	2·2	2,980		5,330
17		500	2·3	3,220	3·3	5,900
18	0·4	500		2,980		5,330
19	0·45	535		2,500		4,780
20		575	1·9	2,300	2·7	4,240
21		575		2,500	2·8	4,500
22	0·55	615		2,750		3,980
23		650	2·2	2,980		3,480
24		690	2·3	3,220	2·15	2,860
25	0·7	725		2,980		2,980
26	0·65	690		2,750		3,220
27		690	2·0	2,500	2·4	3,480
28		725		2,500	2·45	3,600
29	0·7	725		2,400		3,720
30	0·9	965	1·8	2,100	2·6	3,980
31			1·9	2,300		

DAILY GAUGE HEIGHT AND DISCHARGE of Spillimacheen River, near Spillimacheen, for 1914—*Concluded.*

Day	July		August.		September		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.
1		4,640		3,220		1,640		1,000	0·5	575		375
2	3·1	5,330	2·4	3,480	1·50	1,590		1,000		550	0·2	375
3		5,330		3,220		1,590	1·0	1,000		525		360
4	3·1	5,330		2,980		1,590	0·9	925	0·4	500		340
5	3·2	5,620	2·0	2,500	1·50	1,590		845		475	0·1	325
6	3·3	5,900		2,500	1·40	1,450		785		450	0·0	275
7		5,900		2,750		1,390	0·7	725	0·3	425		275
8	3·3	5,900	2·1	2,750		1,330		700	0·3	425		275
9		5,900	1·8	2,400		1,260		675		425	0·0	275
10		5,620		2,400	1·20	1,200	0·6	650		425		275
11	3·2	5,620		2,500		1,150	0·55	612	0·3	425		275
12	3·3	5,900	2·0	2,500	1·10	1,100		575		425	0·0	275
13		5,900		2,500	0·90	965		537		425	0·0	275
14		5,620		2,500		820	0·4	500	0·3	425		250
15	3·2	5,620	2·0	2,500		735		550	0·2	375		250
16		5,060	2·1	2,750	0·60	650		600		375		250
17		5,060		2,750		1,050	0·6	650		375		225
18	2·8	4,500		2,750		1,350	0·7	725	0·2	375		225
19	2·9	4,780	2·1	2,750	1·60	1,750		675		355		225
20		4,240		2,670	1·50	1,590		625		345		225
21		3,720		2,580		1,280	0·5	575	0·1	325		250
22	2·2	2,980	2·0	2,500		960		525	0·1	325		250
23		3,220	1·75	2,410	0·60	650		475		360		250
24		3,480		1,980		830	0·3	425		390		250
25	2·5	3,720		1,950		1,020		425	0·3	425		250
26	2·3	3,220	1·70	1,920	1·20	1,200		425		415		250
27		3,220		1,980	1·20	1,200	0·3	425		410		250
28		2,980		2,040		1,130		465	0·25	400		250
29	2·2	2,980	1·80	2,400		1,070		505	0·2	375		250
30		2,980	1·6	1,750	1·0	1,000		575		375		250
31		2,980		1,700			0·5	575				250

MONTHLY DISCHARGE of Spillimacheen River at Spillimacheen, for 1914.

(Drainage area 580 square miles.)

Month	Discharge in Second Feet.				Run-Off		Accuracy.
	Maximum	Minimum.	Mean	Per square mile	Depth in inches on Drainage area.	Total in acre-feet	
April	905	200	468·0	0·81	0·90	27,800	D
May	3,220	1,390	2,340	4·03	4·65	144,000	B
June	5,900	2,100	3,830	6·61	7·38	228,000	B
July	5,900	2,980	4,620	7·97	9·19	284,000	B
August	3,480	1,700	2,460	4·24	4·89	151,000	B
September	1,750	650	1,200	2·08	2·32	71,400	B
October	1,000	425	635	1·09	1·29	39,000	D
November	575	325	416	0·72	0·80	24,800	D
December	375	..	270	0·47	0·54	16,600	

TOBY CREEK, NEAR ATHALMER (3020).

Location.—One and one-half miles from Athalmer, 1 mile from mouth, on highway bridge on road from Athalmer to Wilmer.

Records Available.—June to September, 1912; May to October, 1913; April to November, 1914.

Climatic Conditions.—The climatic conditions at the mouth of Toby creek are similar to Invermere. The precipitation at Invermere from December 1, 1913, to November 30, 1914, was 13 inches. The summer days are hot and the evenings cool. The winters are about four months long, and at times very severe. The thermometer has gone as low as 40° F. Chinook winds occasionally strike the locality and a great change in temperature results. Toby creek remains frozen for about four months, and frazil ice is prevalent.

Gauge.—Vertical staff gauge is used and read daily by Mr. H. H. Peters, Cyderdale Ranch, Wilmer.

Channel.—The channel is straight above the section, but widens out below. Two channels are formed by a central pier in the bridge. The water is not at right angles to the bridge, and is swift.

Discharge Measurements.—Five measurements were made in 1912, nine in 1913, and three in 1914, from the highway bridge.

Accuracy.—Gauge readings are good, the measurements are not reliable, due to a possibility of backwater from the Columbia. Accuracy, 20 per cent.

DISCHARGE MEASUREMENTS of Toby Creek, near Athalmer, B.C., for 1914.

Date	Hydrographer.	Meter No	Width	Area of Section	Mean Velocity	Gauge Height.	Discharge.
1914			Feet.	Sq. ft.	Ft. per sec	Feet	Sec.-ft
May 5.	D. O'B. G	1048	160	316	2·00	1·20	631
June 19	J. A. E	1909	198	627	4·79	3·15	3,000
Oct 22	"	1909	185	159	1·87	0·6	298

DAILY GAUGE HEIGHT AND DISCHARGE of Toby Creek, near Athalmer, for 1914.

Day	April		May.		June	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0·9	440	2·0	1,490
2			1·25	682	2·45	2,060
3			1·50	915	3·0	2,800
4			1·20	640	2·9	2,670
5			1·40	725	2·4	2,000
6			1·25	682	2·2	1,740
7			1·20	640	2·0	1,490
8			1·25	682	1·8	1,250
9			1·50	915	1·7	1,130
10			1·55	968	1·7	1,130
11			1·55	968	1·8	1,250
12			1·60	1,020	2·0	1,490
13			1·60	1,020	2·2	1,740
14			1·70	1,130	2·4	2,000
15			2·20	1,740	2·9	2,670
16	0·75	370	2·30	1,870	3·2	3,080
17	0·75	370	2·10	1,610	3·4	3,360
18	0·75	370	2·10	1,610	3·2	3,080
19	0·90	440	1·95	1,430	3·0	2,800
20	0·9	440	1·90	1,370	2·8	2,530
21	0·9	440	1·90	1,370	2·4	2,000
22	0·9	440	1·90	1,370	2·35	1,940
23	0·85	415	1·90	1,370	2·10	1,610
24	0·85	415	2·00	1,490	2·0	1,490
25	0·75	370	1·90	1,370	2·1	1,610
26	0·75	370	1·85	1,310	2·05	1,550
27	0·75	370	1·8	1,250	2·0	1,490
28	0·75	370	1·7	1,130	2·05	1,550
29	0·75	370	1·6	1,020	2·2	1,740
30	0·8	390	1·55	967	2·5	2,130
31			1·7	1,130		.....

Daily Gauge Height and Discharge of Toby Creek, near Athalmer, for 1914—*Concluded.*

Day	July		August		September		October		November	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	2·7	2,490	2·5	2,130	1·3	725	0·70	350	0·7	350
2	2·9	2,670	2·5	2,130	1·2	640	0·70	350	0·7	350
3	3·2	3,080	2·2	1,740	1·3	725	0·70	350	0·65	335
4	3·1	2,940	2·25	1,800	1·35	772	0·70	350	0·60	320
5	3·25	3,150	2·2	1,740	1·5	915	0·70	350	0·60	320
6	3·2	3,080	2·3	1,870	1·35	772	0·70	350	0·60	320
7	3·2	3,080	2·4	2,000	1·30	725	0·70	350	0·55	305
8	3·1	2,940	1·7	1,130	1·20	640	0·70	350	0·55	305
9	3·0	2,800	1·5	915	1·0	500	0·70	350	0·55	305
10	2·85	2,600	1·4	820	0·90	440	0·70	350	0·55	305
11	3·15	3,010	1·5	915	1·00	500	0·70	350	0·55	305
12	3·3	3,220	1·9	1,370	1·00	500	0·70	350	0·50	290
13	3·4	3,360	2·0	1,490	0·85	415	0·65	335	0·50	290
14	3·3	3,220	2·0	1,490	0·80	390	0·70	350	0·50	290
15	2·9	2,670	1·95	1,430	0·70	350	0·70	350	Freeze-up	280
16	2·5	2,135	1·9	1,370	0·80	390	0·70	350		270
17	2·5	2,130	1·5	915	0·70	350	0·65	335		260
18	2·7	2,390	1·5	915	0·80	390	0·65	335		250
19	3·05	2,870	1·7	1,130	0·70	350	0·65	335		250
20	2·6	2,260	1·5	915	0·70	350	0·65	335		250
21	2·1	1,610	1·7	1,130	0·70	350	0·60	320		240
22	1·9	1,370	1·5	915	0·70	350	0·60	320		240
23	1·9	1,370	1·5	915	0·70	350	0·55	305		240
24	1·9	1,370	1·35	772	0·70	350	0·55	305		240
25	1·9	1,370	1·5	915	0·70	350	0·55	305		240
26	2·0	1,490	1·45	867	0·70	350	0·55	305		230
27	2·1	1,610	1·5	915	0·75	370	0·55	305		230
28	2·1	1,610	1·35	772	0·70	350	0·60	320		230
29	1·9	1,370	1·35	772	0·70	350	0·60	320		220
30	2·15	1,680	1·3	725	0·70	350	0·70	350		210
31	2·2	1,740	1·3	725			0·70	350		

Monthly Discharge of Toby Creek near Athalmer for 1914.

(Drainage area, 180 square miles.)

Month.	Discharge in Second-Feet				Run-Off	
	Maximum	Minimum	Mean.	Per Square Mile	Depth in inches on Drainage Area	Total in Acre-feet
June	1,870	440	1,120	6·23	7·18	68,900
July	3,360	1,130	1,960	10·9	12·2	117,000
August	3,360	1,370	2,340	13·0	15·0	144,000
September	2,130	725	1,210	6·72	7·75	74,400
October	915	350	479	2·66	2·97	28,500
November	350	305	336	1·87	2·16	20,700
December	350		276	1·53	1·71	16,400

Accuracy "C."

North Vermilion Creek, near Edgewater (3032).

Location.—The station is about 200 yards above the Golden-Windermere highway bridge. Revelstoke district.

Records Available.—April 15, to September 30, 1914.

Climatic Conditions.—Similar to South Vermilion creek.

Gauge.—Vertical staff gauge at measuring section. Read during 1914 by Mrs. S. B. Harrison.

Channel.—Clean and gravelly. Not subject to shifts.

Discharge Measurements.—Seven measurements were made in 1914, by wading.

Co-operation.—The station was maintained in 1914 by co-operation between the British Columbia Hydrographic Survey and the Provincial Water Rights Branch.

Accuracy.—The data should be within 15 per cent.

General.—North Vermilion creek rises on the westerly slope of the Rocky mountains and flows westward into the Columbia river. This creek drains an area of about 20 square miles. The water of North Vermilion creek is utilized by the Columbia Valley Orchards, Ltd., for irrigation.

DISCHARGE MEASUREMENTS of North Vermilion Creek, near Edgewater, for 1914.

Date	Hydrographer	Meter No.	Width	Area of Section	Mean Velocity.	Gauge Height	Discharge.
1914			Feet	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
April 18	O. J. B. (Prov.)		13·0	8·85	2·38	0·70	21·10
May 6	D. O'B. G.	1048	14·0	16·7	4·00	1·30	66·70
May 26	J. K. B. (Prov.)		15·2	27·7	5·04	1·95	139·10
June 17	J. A. E.	1900	24·0	45·0	6·53	2·80	294·00[1]
July 27	O. J. B. (Prov.)		16·0	16·05	3·71	1·25	59·80
Aug. 24	J. K. B. (Prov.)		13·7	13·21	2·63	1·00	34·80
Sept. 29	O. J. B. (Prov.)		13·0	13·32	3·32	1·15	44·30

[1] Different section.

DAILY GAUGE HEIGHT AND DISCHARGE of North Vermilion creek, near Edgewater, for 1914.

Day	April.		May.		June.		July.		August.		September.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		5·0		44·2	2·3	195·0	2·3	195·0		49·9	0·9	30·4
2		6·0	1·2	52·4		252·0		232·0	1·15	48·3		30·4
3		6·0	1·6	93·4	2·9	315·0	2·7	273·0		48·3	0·9	30·4
4		6·0		82·2		284·0		304·0	1·15	48·3		30·4
5		7·0	1·3	62·0	2·6	252·0	3·0	337·0		49·9	0·9	30·4
6		7·0	1·30	62·0		222·0		348·0	1·2	52·4		30·4
7		7·0	1·25	57·2	2·3	195·0	3·1	360·0		48·3	0·9	30·4
8		8·0		67·0		178·0		326·0	1·1	44·2		30·4
9		8·0	1·4	72·0	2·1	162·0	2·8	294·0		44·2	0·9	30·4
10		8·0	1·5	82·2		170·0	..	273·0	1·1	44·2	.	30·4
11		9·0		84·4	2·2	178·0	2·6	252·0		44·2	0·85	27·8
12		9·0	1·55	87·8		186·0		186·0	1·1	44·2		28·8
13		9·0		93·4	2·3	195·0	1·9	132·0	..	40·6	0·90	30·4
14	0·3	9·0	1·65	99·2		232·0		118·0	1·0	37·0		30·4
15		11·0		112·0	2·7	273·0	1·7	105·0	.	37·0	0·90	30·4
16		13·6	1·9	132·0		298·0		105·0	1·0	37·0		31·7
17		16·8	2·2	178·0	2·95	326·0	1·7	105·0		37·0	0·95	33·7
18		20·6		162·0		326·0		99·2	1·0	37·0		33·7
19	..	25·2		146·0	2·95	326·0	1·6	93·4		37·0	0·95	33·7
20	0·9	30·4	1·9	132·0	. . .	337·0		77·1	1·0	37·0	1·00	37·0
21	0·9	30·4		139·0	3·05	348·0	1·3	62·0		37·0		35·0
22		27·8	2·0	146·0		326·0		62·0	1·0	37·0	0·95	33·7
23	0·8	25·2		170·0	2·85	304·0	1·3	62·0	..	37·0		31·7
24		30·4	2·3	195·0		246·0		62·0	1·0	37·0	0·9	30·4
25	1·0	37·0		170·0	2·3	195·0	1·3	62·0		37·0		30·4
26		37·0	1·95	139·0		170·0		57·2	1·0	37·0	0·9	30·4
27		37·0		122·0	2·0	146·0	1·2	52·4		35·0	1·1	44·2
28	1·0	37·0	1·7	105·0		154·0		48·3	0·95	33·7		40·0
29		37·0		105·0	2·1	162·0	1·1	44·2		31·7		40·0
30	1·0	37·0	1·7	105·0		178·0		48·3	0·90	30·4		30·0
31			1·75	112·0			1·2	52·4		30·4		

MONTHLY DISCHARGE of North Vermilion Creek near Edgewater, for 1914.

(Drainage area, 20 square miles.)

Month.	Discharge in Second Feet.				Run-Off		Accuracy
	Maximum.	Minimum.	Mean	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
April	37·0		18·6	0·93	1·04	1,110	
May	195·0	44·2	110·0	5·50	6·34	6,760	D
June	348·0	146·0	238·0	11·9	13·3	14,200	D
July	360·0	44·2	156·0	7·80	8·99	9,590	D
August	52·4	30·4	40·3	2·02	2·33	2,480	C
September	44·2	27·8	32·2	1·61	1·80	1,920	C

SOUTH VERMILION CREEK, NEAR EDGEWATER (3033).

Location.—The station on South Vermilion creek is about 40 feet above the highway bridge on the Golden-Windermere road, and about one-half mile above the mouth. Revelstoke district.

Records Available.—April to September, 1914.

Climatic Conditions.—Summer is hot, with cold nights. Precipitation is about the same as that of Golden. Winter is of about four and one-half months duration. Minimum temperature about -40° F.

Gauge.—Vertical staff gauge, read in 1914 by Mr. A. Braisher, driver of Rocky Mountain mail stage.

Channel.—Gravelly, and does not seem subject to shifts.

Discharge Measurements.—Eight measurements were made in 1914, by wading.

Co-operation.—This station was maintained in 1914 by co-operation with the Provincial Water Rights Branch.

Accuracy.—Data should be within 20 per cent.

General.—South Vermillion creek rises on the westerly slope of the Rocky mountains and flows westward into the Columbia river. It drains an area of about 10 square miles. The use of the creek is confined to irrigation.

DISCHARGE MEASUREMENTS of South Vermilion Creek, near Edgewater, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
April 18	O. J. B. (Prov.)	.....	14·6	7·50	1·58	0·40	11·90
May 6	D. O'B. G	1,048	14·5	12·30	2·59	0·60	31·90
" 25	J. K. B. (Prov.)		15·0	15·64	4·16	0·95	65·20
June 21	J. A. E.	1,909	14·5	22·40	4·78	1·20	107·00
July 27	O. J. B. (Prov.)		14·0	11·95	2·77	0·79	33·10
Aug. 3	J. A. E	1,909	14·5	12·80	2·74	0·70	35·20
" 24	J. K. B. (Prov.)		14·5	11·69	1·90	0·55	22·20
Sept. 30	"		14·0	9·53	2·08	0·58	19·80

DAILY GAUGE HEIGHT AND DISCHARGE of South Vermilion Creek, near Edgewater, for 1914.

Day.	April.		May.		June.		July.		August.		September.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.
1	......	6·0	0·75	43·8	....	75·0	1·2	105·0	0·7	38·2	0·55	23·6
2	......	6·0	0·7	38·2	1·10	89·6	....	105·0	....	38·2		23·6
3		6·0		36·2		116·0	1·2	105·0	0·7	38·2	0·55	23·6
4		6·0		34·2	1·45	145·0		100·4		35·2		21·0
5		6·0	0·65	33·1		126 0	1·15	97·3	0·65	33·1	0·50	19 2
6		6·0		31·1	1·20	105·0		92·7		33·1	0·50	19·2
7		6·0	0·6	28·1	1·10	89·6	1·1	89·6		33·1		19·2
8		7·0		30·1		85·2		89·6	0·65	33·1	0·50	19·2
9		7·0	0·65	33·1	1·05	82·3		75·0		30·1		19·2
10		7·0	0·75	43·8		88·1	1·0	75·0	0·6	28·1	0·50	19·2
11		8·0		41·5	1·12	92·7	0·95	68·3		28·1		20·1
12		8·0	0·72	40·4		98·8	0·95	68·3	0·6	28·1	0·52	21·0
13		8·5		44·9	1·2	105 0		82 3	0 65	33·1	0·50	19·2
14	0 35	8·55	0·8	49·2	1·35	129 0	1·15	67·3	0·6	28·1		19·2
15		9·73		64·3		137 0		83·8	0·6	28·1	0·50	19·2
16	0·4	11·5	1·05	82·3	1·45	145·0	0·97	71·0	..	28·1	0·52	21·0
17		11·5	1·0	75·0		145·0		68 3	0·6	28·1		21·9
18	0·4	11·5		72·3	1·45	145·0		65·6		25·4	0·55	23·6
19	0·45	15·3	0·95	68·3		137·0	0·90	61·6	0·55	23·6		26·3
20		17·7		64·3	1·35	129·0	. .	61·6		23·6	0·60	28·1
21	0·50	19·2	0·9	61·6	1·20	105·0	0·90	61·6	0·57	23·6	.. ..	28·1
22		16·9		61·6		97·3		57·9	0·55	23·6	0·59	27·2
23	0·45	15·3	0·9	61·6	1·10	89·6	0·85	55 4		23·6		26·3
24		15·3	0·95	68·3		94·2		61·6	0·55	23 6	0·58	26·3
25	0·45	15·3		68·3	1·15	97·3	0·95	68·3	. .	23·6	. .	25·4
26	0·5	19·2	0·95	68·3		97·3	0·8	49·3	0·5	23·6	0·57	25·4
27		19·2		64·3	1·15	97·3		49·3	..	23·6		25·0
28	0·5	19·2	0·88	59·1	1·10	89·6	0·8	49·3		23·6	..	23·0
29		21·0		54·2		91·1		47·1		23·6		21·0
30	0·55	23·6	0·8	49·3	1·12	92·7	0·75	43·8	0·55	23·6	. ..	20·0
31	..	.	0·9	61·6	.. ..	..	...	40·4	....	23·6	....	....

MONTHLY DISCHARGE of South Vermilion, near Edgewater, for 1914.

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
March	23·6		11·9	1·19	1·33	708
April	82·3	28·1	52·6	5·26	6·06	3,230
May	145·0	82·3	107·0	10·7	11 9	6,370
June	105·0	40·4	72·4	7·24	8·35	4,450
July	38·2	23 6	28·2	2·82	3·25	1,730
August	28·1	19·2	22·5	2·25	2·51	1,340

Accuracy "D"

WINDERMERE CREEK, NEAR WINDERMERE (3055).

Location.—The station is about 5 miles from the mouth, and above Tegart's diversion. It is about 7 miles from the town of Windermere. Revelstoke district.

Records Available.—April 1 to September 30, 1914.

Climatic Conditions.—Same as Invermere. (See Toby creek.)

Gauge.—Vertical staff gauge at station. Read tri-weekly by Mr. Lloyd Tegart.

Channel.—Broken gravelley, and subject to shifts.

Discharge Measurements.—Four in 1913; six in 1914, by wading.

Co-operation.—Station maintained in 1914 by co-operation with the Provincial Water Rights Branch.

Accuracy.—Results on Windermere creek are not guaranteed.

General.—Windermere creek flows from the westerly slope of the Rockies, rising in Tegart's pass and flowing to Windermere lake, draining an area of 15 square miles. It is practically all used for irrigation and domestic purposes.

DISCHARGE MEASUREMENTS of Windermere Creek, near Windermere, B.C., for 1913-14.

Date	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq ft	Ft per sec.	Feet.	Sec -ft.
1913.							
Sept. 26 ..	O. J. B. (Prov.)	6,018		6·50	3·14	0·60	20·4
Nov. 7	"	6,018		5·42	3·23	0·50	17·5
July 22	"	6,018		8·30	3·08	0·60	25·6
1914.							
April 14	O. J. B (Prov.)	6,018	10·0	4·74	2·60	0·43	12·3
May 12 .	"	6,018	10·0	5·06	3·30	0·48	16·7
June 20.. . .	J. A. E	1,909	13·0	13·7	4·46	1·15	61·1
July.. 28	O. J. B (Prov.)	6,018	13·5	9·4	3·38	0·77	31·8
Aug. 26 ..	J. K. Bell (Prov.)	6,018	14·4	9·3	3·60	0·70	33·4
Sept 30 ..	"	6,018	12·3	7·5	3·30	0·70	24·9

DAILY GAUGE HEIGHT AND DISCHARGE of Windermere Creek, near Windermere, for 1914.

DAY.	April.		May.		June		July		August.		September	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft
1		12·0		15·3	1·1	57·2		54·4		38·8		29·8
2		12·0		15·2		69·1	1·07	54·9	0·85	38·8	0·72	30·1
3		13·0		15·1	1·4	81·0		54·9		38·8		31·0
4		13·0	0·45	15·0		77·8		54·9	0·85	38·8	0·75	32·0
5	0·42	13·5		15·3	1·32	74·6	1·07	54·9		37·6	0·80	35·3
6		13·5		15·6		71·8	..	51·8		28·5		35·3
7		13·5	0·47	15·9	1·25	69·0	..	50·8	0·80	35·3	0·80	35·3
8	0·42	13·5		16·3		69·1	0·95	45·8		35·3		37·0
9		13·5		16·7	1·1	57·2		46·2	0·80	35·3	0·85	38·8
10		13·5		17·0		63·1		46·6		35·3		38·8
11		13·5	0·50	17·4	1·25	69·0		47·0	0·80	35·3		38·8
12	0·42	13·5		18·0		69·0	0·97	47·3		35·3	0·85	38·8
13		14·0		18·5	1·25	69·0		47·3		35·3		38·8
14		14·0	0·53	19·0	1·3	73·0		47·3	0·80	35·3	0·85	38·8
15	0·44	14·5		21·8		71·6	0·97	47·3		32·0		39·1
16		14·7	0·63	24·6		70·3		46·1	0·70	28·8		39·6
17		14·9	0·75	32·0	1·25	69·0		44·8		28·8	0·87	40·1
18		15·1		30·4		67·0		43·5	0·70	28·8		41·2
19	0·46	15·4	0·70	28·8	1·2	65·0	0·90	42·2	0·70	28·8	0·90	42·2
20		15·6		28·8	1·1	57·2	0·90	42·2		28·8		40·5
21		15·8	0·70	28·8		52·2		39·5		28·8		38·8
22	0·47	15·9	..	30·4		47·2	0·82	36·7	0·70	28·8		37·2
23		15·8	0·75	32·0	0·9	42·2		38·5		28·8		35·6
24		15·6		33·7		44·6		40·3		28·8	0·88	34·0
25		15·5	0·80	35·5		47·0	0·90	42·2	0·70	28·8		34·0
26	0·46	15·4		34·7	1·0	49·5		42·2		28·8		34·0
27		15·4		34·0		50·8	0·90	42·2	0·70	28·8	0·88	34·0
28		15·4	0·77	33·4		52·1		41·4		28·8		33·6
29	9·46	15·4		32·7	1·05	53·4		40·5	0·70	28·8		33·2
30		15·4	0·75	32·0		53·9		39·6		29·1	0·66	32·7
31..				44·6		.	0·85	38·8		29·5		

MONTHLY DISCHARGE of Windermere Creek, near Windermere, for 1914.

MONTH.	DISCHARGE IN SECOND-FEET				RUN-OFF.	
	Maximum	Minimum.	Mean	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
March	15·9		14·4	0·96	1·07	857
April	35·3	15·0	24·8	1·65	1·90	1,520
May	61·0	42·2	61·9	4·13	4·61	3,680
June	58·9	36·7	45·5	3·03	3·49	2,800
July	38·8	28·8	32·4	2·16	2·49	1,990
August	42·2	29·8	36·3	2·42	2·70	2,160

BULL RIVER, NEAR MOUTH (3039).

Location.—At mouth, near Bull River settlement, 6 miles from Wardner, in south-east Kootenay, Cranbrook district.

Records Available.—May to November, 1914.

Climatic Conditions.—The summers are hot and dry. The winters are very severe, with a light snowfall in the lower altitudes. Ice conditions exist generally from some time in November till about the first of April. During this period extreme low flow may be anticipated, and frazil ice is to be expected.

Gauge.—A vertical staff gauge, situated about 100 yards below Bull River Lumber Company's (C.P.R.) dam, one-quarter mile from Bull river and 1 mile from the mouth.

Channel.—Channel is straight for 100 yards above and below the gauge.

Discharge Measurements.—Nine well-distributed measurements were made from the railway bridge in 1914.

Accuracy.—The channel at the measuring section shifted considerably during June and possibly the first week in July. The daily gauge readings are reliable. The results during May, June, and July, are considered to be within 20 per cent, and after July, 10 per cent.

General.—Bull river is a stream about 30 miles long. It rises in the Rockies, amongst peaks from 8,000 to 10,000 feet above sea-level, and flows generally in a southwesterly direction through various canyons and over shifting gravel beds into the Kootenay, near the settlement of Bull river, 6 miles from Wardner, B.C. The stream generally is from 30 to 150 feet wide, but about 6 miles from the mouth it is confined in a deep rock canyon, in places not over 15 feet in width at the top. This canyon extends for about 400 feet, and in this distance the river drops 175 feet, about half of this being a perpendicular fall 100 feet from the head of the canyon. A little over 1 mile from the mouth the river is controlled by the Bull River Lumber Company's dam, built to form a pond for logs.

A company owns timber limits towards the source of the stream, and every year this company has been driving logs down the river to their mill near the mouth, where the logs are sawn into ties.

Some seven or eight years ago a company commenced the installation of a hydro-electric development at the above mentioned canyon, about 6 miles from the mouth. A cedar flume, 16 feet by 8 feet, and some 10,000 feet in length was constructed. By means of this flume a head of about 250 feet was obtained. The installation has not been completed to date, in fact practically nothing has been done since the flume was constructed.

Cranbrook District (V)—Bull river looking up from metering section.

DISCHARGE MEASUREMENTS of Bull River, at Mouth, for 1914.

Date.		Hydrographer.	Meter No	Width.	Area of Section	Mean Velocity	Gauge Height	Discharge
				Feet	Sq. ft.	Ft. per sec	Feet	Sec. ft
Apr	28	H. B. H. & C. E. R	1048	94	502	3·78	2·02	1,870
May	15	D. O. B. Gill	1048	122	677	7·0.	4·10	4,880[1]
June	6	" "	1048	121	608	6·19	3·50	3,770[1]
"	15	" "	1048	121	642	7·04	4·10	4,980[1]
July	30	D. O. B. G. & R. H. H.	1929	79	388	3·39	1·30	1,310
"	26	"	1929	94	442	3·16	1·40	1,400
Oct	8	"	1929	94·5	425	1·60	0·74	685
"	13	"	1929	94·5	419	1·59	0·70	668
Dec	17	J. A. E. & C. B. C.	1909	37	117	1·19		140[2]

[1] Soundings incorrect

[2] Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Bull River, at Mouth, for 1914.

Day	April		May		June.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft
1			2·4	2,600	3·9	4,660
2			3·4	3,950	4·7	5,830
3			4·0	4,800	5·5	7,060
4			3·6	4,230	5·2	6,590
5			3·0	3,390		5,340
6			2·7	2,990	3·5	4,090
7			2·4	2,600	3·4	3,950
8			2·4	2,600	2·9	3,250
9			3·3	3,810	2·4	2,600
10			3·3	3,810	2·4	2,600
11			3·3	3,810	2·5	2,730
12			3·0	3,390	2·8	3,120
13			3·3	3,810	3·2	3,660
14			3·6	4,230	3·7	3,990
15			4·1	4,940	4·1	4,940
16			4·3	5,230	4·3	5,230
17			4·2	5,080	4·4	5,380
18			4·2	5,080	5·1	6,440
19			3·95	4,730	4·6	5,680
20			3·8	4,510	4·1	4,940
21			3·3	3,810	3·4	3,950
22			3·5	4,090	3·1	3,520
23			3·4	3,950	2·7	2,990
24			3·8	4,510	2·4	2,600
25			3·9	4,660	3·0	3,390
26			3·6	4,230	3·0	3,390
27			3·4	3,950	2·9	3,250
28	2·0	2,100	3·0	3,390	3·0	3,390
29	1·9	1,970	2·7	2,990	3·1	3,520
30	2·0	2,100	2·6	2,860		3,590
31			3·1	3,520		

DAILY GAUGE HEIGHT AND DISCHARGE of Bull River, at Mouth, for 1914.

Day.	July.		August.		September		October.		November.		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3·2	3,660	1·3	1,290	0·50	475	0·7	665	1·9	1,970	0·6	570
2	3·4	3,950	1·3	1,290	0·50	475	0·9	860	2·1	2,220	0·6	570
3	3·4	3,950	1·3	1,290	0·40	390	0·9	860	1·7	1,740	0·6	570
4	3·5	4,090	1·2	1,180	0·40	390	0·9	850	1·7	1,740	0·5	475
5	3·4	3,950	1·1	1,070	0·40	390	0·8	760	1·9	1,970	0·5	475
6	3·3	3,810	1·0	960	0·40	390	0·8	760	1·7	1,740	0·6	570
7		3,690	1·0	960	0·40	390	0·7	665	1·7	1,740	0·4	390
8		3,400	1·0	960	0·50	475	0·7	665	1·5	1,510	0·4	390
9		3,240	0·9	860	0·50	475	0·7	665	1·3	1,290	Frozen.	
10		3,000	0·9	860	0·50	475	0·7	665	1·3	1,290		
11	2·6	2,860	0·8	760	0·50	475	0·7	665	1·3	1,290		
12	2·5	2,730	0·8	760	0·50	475	0·7	665	1·2	1,180		
13	2·7	2,990	0·8	760	0·50	475	0·7	665	1·2	1,180		
14	2·5	2,730	0·8	760	0·50	475	0·8	760	1·0	960		
15	2·5	2,730	0·8	760	0·50	475	1·0	960	0·7	665		
16	2·4	2,600	0·8	760	0·50	475	1·1	1,070	0·6	570		
17	2·1	2,220	0·8	760	0·60	570	1·1	1,070	0·6	570		
18	2·1	2,220	0·9	860	0·70	665	1·1	1,070	0·6	570		
19	2·0	2,100	0·7	665	1·60	1,620	1·5	1,510	0·6	570		
20	2·0	2,100	0·7	665	1·20	1,180	1·4	1,400	0·8	760		
21	1·9	1,970	0·7	665	1·00	960	1·2	1,180	0·8	760		
22	1·7	1,740	0·7	665	0·90	860	1·0	960	0·7	665		
23	1·5	1,510	0·7	665	1·00	960	0·9	860	0·7	665		
24	1·5	1,510	0·7	665	1·00	960	0·9	860	0·6	570		
25	1·5	1,510	0·6	570	1·00	960	0·9	860	0·6	570		
26	1·5	1,510	0·6	570	1·00	960	0·9	860	0·9	860		
27	1·5	1,510	0·6	570	1·20	1,180	0·8	760	0·7	665		
28	1·6	1,510	0·6	570	1·00	960	0·8	760	0·7	665		
29	1·4	1,400	0·6	570	0·90	860	0·8	760	0·6	570		
30	1·3	1,290	0·6	570	0·80	760	0·8	760	0·6	570		
31	1·3	1,290	0·5	475			1·0	960				

MONTHLY DISCHARGE of Bull River, at Mouth, for 1914.

(Drainage Area, 420 square miles.)

Month	Discharge in Second-Feet				Run-Off		
	Maximum.	Minimum.	Mean	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	Accuracy
May	5,230	2,600	3,920	9·33	10·8	241,000	D
June	7,060	2,600	4,190	9·98	11·2	249,000	D
July	4,090	1,120	2,410	5·74	6·62	148,000	D
August	1,290	475	800	1·90	2·19	49,190	B
September	1,620	390	688	1·64	1·83	40,900	B
October	1,510	665	866	2·06	2·37	53,200	B
November	2,220	570	1,070	2·55	2·84	63,670	B

CHERRY CREEK, NEAR WASA (3038).

Location.—About 1 mile above the mouth, near Wasa, in south-east Kootenay. Cranbrook district.

Records Available.—May to November, 1913; May to September, 1914.

Climatic Conditions.—Summers hot and dry, winters severe (as low as −50°F.). with a light snowfall. Generally similar to Cranbrook (see St. Marys river).

Gauge.—Vertical staff gauge, marked in feet and inches, located on highway bridge about 1 mile from mouth.

Channel.—Channel is regular and affords a good measuring section. Slight shifts are possible.

Discharge Measurements.—Discharges from May to June 30, 1913, were plotted from a curve based on measurements made by Mr. H. B. Hicks, District Engineer, Provincial Water Rights Branch. The 1914 curve was plotted from five discharge measurements made in 1914 after June 30. Measurements made in 1913 after June 30 fit on the 1914 curve, so 1913 discharges after June 30 were plotted from the 1914 curve.

Accuracy.—1913, 20 per cent; 1914, 10 per cent and 15 per cent.

Co-operation.—During 1914 this station was maintained by co-operation with the Provincial Water Rights Branch.

General.—Cherry creek is a small tributary of the Kootenay, flowing in from the right near Wasa in southeast Kootenay. The drainage area, as taken from the only available maps, appears in the neighbourhood of 80 square miles. The stream is used for irrigation.

DISCHARGE MEASUREMENTS of Cherry Creek, near Wasa, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 28	D. O. B. G., R. H. H	1530	16·5	32·8	4·61	1·133	152
July 15	R. H. H. (Prov.)	......	16·5	30·2	3·05	0·958	92·2
July 24	D. O. B. G.	1929	16·5	24·2	2·34	0·604	56·7
Aug. 31	H. B. H. (Prov.)	......	16·5	13·7	1·18	0·062	16·2
Sept. 25	" "	......	16·5	16·3	1·37	0·229	22·3

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1913.

Day	May		June	
	Gauge Height	Discharge	Gauge Height.	Discharge
	Inches.	Sec.-ft.	Inches.	Sec.-ft.
1		40·0	26·5	353·0
2		45·0	27·2	370·0
3		50·0	26·2	346·0
4		55·0	27·0	365·0
5		60·0	27·0	363·0
6	9·5	65·0	26·5	353·0
7	10·5	75·0	25·0	318·0
8	12·5	97·0	24·0	295·0
9	13·25	106·0	25·5	329·0
10	15·5	137·0	26·2	346·0
11	17·0	160·0	26·0	341·0
12	16·5	152·0	26·0	341·0
13	16·5	152·0	23·0	273·0
14	15·5	137·0	22·5	262·0
15	15·0	130·0	22·0	252·0
16	15·0	130·0	21·0	232·0
17	15·0	130·0	17·0	160·0
18	15·0	130·0	14·5	123·0
19	14·0	116·0	14·0	116·0
20	13·0	103·0	13·5	109·0
21	13·0	103·0	15·0	130·0
22	15·0	130·0	14·5	123·0
23	15·0	130·0	14·5	123·0
24	17·25	164·0	14·0	116·0
25	22·0	252·0	14·5	123·0
26	24·0	295·0	14·5	123·0
27	24·0	295·0	14·0	116·0
28	24·0	295·0	16·0	144·0
29	23·0	273·0	14·5	123·0
30	24·2	300·0	14·0	116·0
31	24·0	295·0		

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1913.

DAY.	July		August.		September		October		November	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	13·7	119·0	4·75	34·0	3·75	28·5	3·0	24·0	1·5	18·0
2	14·5	131·0	4·75	34·0	4·0	30·0	3·0	24·0	1·5	18·0
3	13·75	120·0	4·75	34·0	3·5	27·0	3·0	24·0	1·5	18·0
4	13·5	116·0	4·5	32·5	3·25	25·5	3·0	24·0	1·5	18·0
5	13·75	120·0	4·0	30·0	3·0	24·0	3·0	24·0	1·5	18·0
6	13·0	110·0	4·0	30·0	3·0	24·0	3·0	24·0	1·5	18·0
7	12·5	102·0	4·0	30·0	3·0	24·0	3·0	24·0	1·5	18·0
8	12·0	97·0	4·0	30·0	3·5	27·0	3·0	24·0	1·5	18·0
9	12·0	97·0	4·0	30·0	3·0	24·0	3·0	24·0	1·5	18·0
10	11·0	85·0	4·0	30·0	3·0	24·0	3·0	24·0	1·5	18·0
11	11·0	85·0	4·0	30·0	3·0	24·0	3·0	24·0	2·0	20·0
12	10·0	75·0	4·0	30·0	3·0	24·0	3·0	24·0	2·0	20·0
13	10·0	75·0	4·0	30·0	3·0	24·0	3·0	24·0	2·0	20·0
14	10·0	75·0	4·0	30·0	3·0	24·0	3·5	27·0	2·0	20·0
15	9·25	67·5	4·0	30·0	3·0	24·0	3·5	27·0	2·0	20·0
16	9·0	65·0	4·0	30·0	3·0	24·0	3·5	27·0	2·0	20·0
17	8·0	56·0	4·0	30·0	3·0	24·0	3·5	27·0	2·0	20·0
18	7·5	52·5	4·0	30·0	3·0	24·0	3·5	27·0	2·0	20·0
19	7·0	49·0	4·0	30·0	3·0	24·0	3·5	27·0	2·0	20·0
20	7·0	49·0	4·0	30·0	3·0	24·0	3·0	24·0	1·0	16·0
21	7·0	49·0	4·5	32·5	3·0	24·0	3·0	24·0		16·0
22	7·0	49·0	4·0	30·0	3·0	24·0	3·0	24·0		16·0
23	6·0	42·0	4·0	30·0	3·5	27·0	2·0	20·0		16·0
24	6·0	42·0	4·0	30·0	3·5	27·0	2·0	20·0		16·0
25	6·0	42·0	4·0	30·0	3·5	27·0	2·5	22·0		16·0
26	6·0	42·0	4·0	30·0	3·5	27·0	2·5	22·0		16·0
27	5·5	38·5	4·0	30·0	3·5	27·0	2·5	22·0		16·0
28	5·0	35·0	4·0	30·0	3·0	24·0	2·5	22·0		16·0
29	5·0	35·0	4·0	30·0	3·0	24·0	1·5	18·0		16·0
30	5·0	35·0	4·0	30·0	3·0	24·0	1·5	18·0		16·0
31	5·0	35·0	4·0	30·0			1·5	18·0		

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1914.

Day	April.		May		June	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Inches	Sec.-ft	Inches	Sec.-ft	Inches	Sec.-ft
1			14·75	132·0	13·25	112·0
2			15·75	150·0	15·0	137·0
3			16·5	163·0	18·25	193·0
4			17·75	183·0	22·0	268·0
5			17·0	170·0	24·0	312·0
6			16·5	163·0	20·5	236·0
7			15·0	137·0	18·0	188·0
8			13·25	112·0	16·5	163·0
9				116·0	13·75	120·0
10			13·75	120·0	13·0	110·0
11			15·0	137·0	12·75	105·0
12			16·75	166·0	12·5	102·0
13			14·75	132·0	13·75	120·0
14	8·75	62·8	15·0	137·0	16·0	155·0
15	9·0	65·0	15·0	137·0	18·5	197·0
16	9·5	70·0	15·25	142·0	19·5	216·0
17	9·5	70·0	16·75	166·0	20·5	236·0
18	8·75	62·8	17·75	183·0	21·5	256·0
19	9·5	70·0	17·25	175·0	23·5	301·0
20	13·0	110·0	16·75	166·0	21·5	256·0
21	14·5	130·0	15·75	150·0	18·5	197·0
22	14·0	124·0	15·0	137·0	16·5	163·0
23	13·25	112·0	14·25	126·0	15·5	146·0
24	13·75	120·0	14·0	124·0	13·5	116·0
25	14·75	132·0	14·25	126·0	13·5	116·0
26	14·5	130·0	14·0	124·0	17·25	175·0
27	14·0	124·0	16·0	155·0	15·2	141·0
28	14·0	124·0	16·0	155·0	15·0	137·0
29	14·0	124·0	14·5	130·0	12·2	99·0
30	14·25	126·0	13·5	116·0	12·0	97·0
31	...	......	12·25	100·0		

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1914.

Day	July.		August		September		October	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Inches	Sec.-ft.	Inches	Sec.-ft.	Inches	Sec.-ft.	Inches	Sec.-ft.
1	12·0	97·0	3·0	24·0	1·0	16·0	2·0	20·0
2	13·0	110·0	3·0	24·0	1·0	16·0	2·0	20·0
3	13·0	110·0	3·0	24·0	1·0	16·0	3·0	24·0
4	13·0	110·0	2·7	22·8	1·0	16·0	3·0	24·0
5	14·0	124·0	2·5	22·0	1·0	16·0	3·0	24·0
6	13·2	112·0	2·5	22·0	1·0	16·0	3·0	24·0
7	12·5	102·0	2·5	22·0	2·0	20·0	3·0	24·0
8	11·5	91·0	2·5	22·0	2·0	20·0		
9	11·0	85·0	2·5	22·0	2·0	20·0		
10	10·2	77·0	2·5	22·0	1·0	16·0		
11	9·5	70·0	2·5	22·0	0·5	14·0		
12	9·0	65·0	2·5	22·0	0·5	14·0		
13	8·2	57·8	2·5	22·0	0·5	14·0		
14	10·7	82·0	2·5	22·0	0·5	14·0		
15	12·0	97·0	2·5	22·0	0·5	14·0		
16	11·0	85·0	2·5	22·0	1·25	17·0		
17	8·7	62·3	2·5	22·0	4·0	30·0		
18	8·0	56·0	2·5	22·0	4·0	30·0		
19	7·2	50·4	2·5	22·0	4·75	33·8		
20	7·0	49·0	2·5	22·0	4·75	33·8		
21	7·0	49·0	2·0	20·0	4·0	30·0		
22	7·0	49·0	2·0	20·0	4·0	30·0		
23	6·2	43·4	2·0	20·0	4·0	30·0		
24	6·5	45·5	2·0	20·0	3·5	27·0		
25	5·8	40·6	2·0	20·0	3·0	24·0		
26	5·0	35·0	2·0	20·0	2·5	22·0		
27	5·0	35·0	[illegible]	16·0	2·5	22·0		
28	5·0	35·0	[illegible]	16·0	3·0	24·0		
29	5·0	35·0	[illegible]	16·0	3·0	24·0		
30	5·0	35·0	[illegible]	16·0	3·0	24·0		
31	5·0	35·0	[illegible]	16·0				

MONTHLY DISCHARGE of Cherry Creek, near Wasa, for 1913.

(Drainage area, 80 square miles.)

Month.	Discharge in Second-feet				Run-Off	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet
May	[illegible]	[illegible]	145·0	1·81	2·09	8,920
June	[illegible]	[illegible]	230·0	2·87	3·20	13,700
July	[illegible]	[illegible]	70·6	0·88	1·02	4,340
August	[illegible]	[illegible]	30	0·38	0·44	1,870
September	[illegible]	[illegible]	25	0·31	0·35	1,490
October	[illegible]	[illegible]	23	0·29	0·33	1,440
November	[illegible]	[illegible]	[illegible]	0·22	0·24	1,060

Accuracy "D."

MONTHLY DISCHARGE of Cherry Creek, near Wasa, B.C., for 1914.

(Drainage area, 80 square miles.)

Month	Discharge in Second Feet				Run-Off		
	Maximum	Minimum	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre-feet	Accuracy
May	183	100	143	1·79	2·06	8,790	B
June	312	97	176	2·2	2·46	10,500	C
July	124	45	68·7	0·86	0·99	4,220	B
August	21	16	20·9	0·26	0·30	1,290	B
September	33·8	14	21·5	0·27	0·30	1,280	B

ELK RIVER, NEAR ELKO (3048).

Location.—At the cable station 50 yards above the traffic bridge one-quarter mile from Elko in south east Kootenay. Cranbrook district.

Cranbrook District (I)—Photograph showing Elk river cable station above Canyon.

Records Available.—April to November, 1914.

Climatic Conditions.—At Elko, the precipitation from December 1, 1913, to November 30, 1914, was 18.7 inches. The summers are hot and dry. The winters are very severe, as low as -50° F. some seasons, with generally only a light snowfall; 1913-14, approximately 3 feet. Frazil ice may be expected.

Gauge.—A chain gauge was established at the highway bridge, near Elko in November, 1913, and has been read since then by Mr. Wm. Leacey and Mr. Jas. McKee. When the cable station was established in May a new gauge was put in at the section (50 yards above highway bridge). Mr. McKee also read this gauge.

Channel.—The channel below the highway bridge is confined in a canyon, and there is no possibility of shift, though log jams might occasionally affect the gauge readings. The channel above and below the cable station is straight for approximately 40 yards. There is a distinct riffle 30 yards below the section at low water, but at high water it is drowned by the water backing up in its endeavour to get through the narrow canyon below. The low-water control below the cable station may shift somewhat in high water.

Discharge Measurements.—Measurements are made from the cable station. The section is ideal at all stages, except extreme high water, when it is impossible to obtain accurate soundings. In 1914 eight measurements were made, one of which was made on December 18, under ice conditions. Discharge, 630 c.f.s.

Accuracy.—The measurements should be very reliable. Daily gauge readings were obtained, but before July the chain gauge caused trouble. The gauge-height discharge curve appears to be very good. The results after July should be within 5 per cent. and before July 15 per cent.

General.—Elk river is about 150 miles long. It rises near Kananaskis pass, N. latitude 50° 35′, W. longitude 115° 05′, and flows practically due south for about 100 miles, passing through Fernie, and veering slightly to the west passes through Elko and discharges into Kootenay river about 15 miles above the international boundary line. The Elk drains a very mountainous country. The precipitation is not very heavy, being considerably less in this district than in the vicinity of either Field or Glacier.

Elk river is used for lumbering only at present. There is an excellent power site near Elko. Immediately below the highway bridge, Elko, the river enters a canyon about three-quarters of a mile long. In this canyon there is a fall of about 175 feet. A low flow of 400 or 500 c.f.s. may be expected any year, and this is not necessarily a minimum flow. It is anticipated that this power will, at some future date, be harnessed. In order to obtain reliable data a cable station was established a little over 100 yards above this canyon. Very satisfactory open-flow data were obtained in 1914, and in the coming winter one or two low-water measurements will be made.

DISCHARGE MEASUREMENTS of Elk River, near Traffic bridge, Elko, 1914.

Date	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914			Feet.	Sq. ft.	Ft per sec.	Feet.	Sec.-ft.
June 5	D. O'B. G	1048	218	1,380	7·81	8·95	10,800
June 17	do	1048	211	1,140	7·47	7·95	8,570
June 19	do	1048	213	1,200	7·42	8·15	8,950
July 30	do	1929	195	515	3·48	4·12	1,790
July 26	do	1929	195	536	3·51	4·2	1,880
Oct 7	do	1929	194	455	2·95	3·55	1,360
Oct 14	do	1929	195	458	3·07	3·60	1,410
Dec. 18	J. A. E., C. B. C	1909	70	281	2·24	2·8	630

Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Elk River, near Elko, B.C., for 1914.

DAY	April.		May		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2·7	930	5·4	3,380	6·6	5,520
2	2·75	952	6·0	4,380	7·3	6,990
3	2·8	975	6·7	5,710	8·5	9,690
4	2·8	975	6·5	5,340	9·15	11,300
5	2·85	997	6·0	4,380	8·95	10,800
6	3·5	1,330	5·7	3,850	8·05	8,640
7	3·5	1,330	5·5	3,540	7·2	6,770
8	3·6	1,390	5·8	4,020	6·7	5,710
9	3·6	1,390	6·1	4,560	6·2	4,740
10	3·6	1,390	6·3	4,920	5·9	4,200
11	3·7	1,450	6·3	4,920	5·65	3,770
12	3·9	1,600	6·3	4,920	5·85	4,110
13	4·2	1,860	6·3	4,920	6·25	4,830
14	4·5	2,170	6·6	5,520	6·83	6,020
15	4·6	2,290	7·1	6,550	7·2	6,770
16	4·7	2,410	7·5	7,410	7·7	7,850
17	4·55	2,230	7·9	8,290	7·95	8,400
18	4·35	2,010	7·9	8,290	8·2	8,990
19	4·8	2,530	7·7	7,850	8·15	8,880
20	5·3	3,240	7·6	7,630	7·85	8,180
21	5·0	2,790	7·3	6,980	7·35	7,090
22	4·8	2,530	7·2	6,770	6·65	5,620
23	5·0	2,790	7·0	6,330	6·0	4,380
24	4·9	2,660	7·2	6,770	5·7	3,850
25	4·8	2,530	7·3	6,980	5·7	3,850
26	4·75	2,470	7·3	7,410	5·95	4,290
27	4·7	2,410	7·4	7,200	5·65	3,770
28	4·6	2,290	6·9	6,120	5·45	3,460
29	4·5	2,170	6·4	5,120	5·75	3,940
30	4·6	2,290	6·3	4,920	5·55	3,620
31			6·5	5,340		

DAILY GAUGE HEIGHT AND DISCHARGE of Elk River, near Elko, B.C., for 1914.

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5·6	3,690	4·05	1,720	3·3	1,220	3·5	1,330	4·0	1,680	3·3	1,220
2	5·7	3,850	4·05	1,720	3·2	1,170	3·5	1,330	4·7	2,410	3·25	1,200
3	5·85	4,110	4·0	1,680	3·2	1,170	3·55	1,360	4·6	2,290	3·3	1,220
4	6·0	4,380	3·95	1,640	3·2	1,170	3·6	1,390	4·4	2,060	3·25	1,200
5	6·1	4,560	3·95	1,640	3·2	1,170	3·65	1,420	4·9	2,660	3·05	1,100
6	6·05	4,470	3·92	1,610	3·2	1,170	3·6	1,390	4·9	2,660	3·1	1,120
7	5·95	4,290	3·87	1,570	3·2	1,170	3·55	1,360	4·55	2,230	2·9	1,020
8	5·9	4,200	3·9	1,600	3·2	1,170	3·55	1,360	4·3	1,960	2·8	975
9	5·8	4,020	3·9	1,600	3·25	1,200	3·55	1,360	4·15	1,810	2·7	930
10	5·7	3,850	3·9	1,600	3·1	1,120	3·55	1,360	4·05	1,720	2·55	872
11	5·6	3,690	3·8	1,520	3·15	1,140	3·6	1,390	4·2	1,860	....	840
12	5·5	3,540	3·8	1,520	3·1	1,120	3·6	1,390	4·1	1,760	....	810
13	5·4	3,380	3·7	1,450	3·1	1,120	3·55	1,360	4·0	1,680	....	780
14	5·45	3,460	3·7	1,450	3·1	1,120	3·6	1,390	3·9	1,600	....	750
15	5·4	3,380	3·6	1,390	3·15	1,140	3·8	1,520	3·6	1,390	....	720
16	5·3	3,240	3·6	1,390	3·15	1,140	4·0	1,680	3·4	1,270	....	690
17	5·2	3,080	3·75	1,480	3·25	1,200	4·1	1,760	3·45	1,300	....	660
18	5·0	2,790	3·85	1,560	3·35	1,240	4·15	1,810	3·5	1,330	....	630
19	4·8	2,530	3·75	1,480	3·8	1,520	4·35	2,010	3·5	1,330	....	630
20	4·75	2,470	3·75	1,480	3·9	1,600	4·4	2,060	3·5	1,330	....	630
21	4·7	2,410	3·65	1,420	3·8	1,520	4·15	1,810	3·5	1,330	....	630
22	4·65	2,350	3·55	1,360	3·7	1,450	4·0	1,680	3·45	1,300	....	630
23	4·5	2,170	3·55	1,360	3·6	1,390	3·9	1,600	3·4	1,270	....	630
24	4·[illegible]	1,960	3·55	1,360	3·55	1,360	3·8	1,520	3·4	1,270	....	640
25	4·[illegible]5	1,910	3·55	1,360	3·55	1,360	3·75	1,480	3·4	1,270	....	650
26	4·2	1,860	3·52	1,340	3·55	1,360	3·7	1,450	3·7	1,450	....	660
27	4·15	1,810	3·45	1,300	3·55	1,360	3·7	1,450	3·6	1,390	....	670
28	4·15	1,810	3·45	1,300	3·55	1,360	3·6	1,390	3·6	1,390	....	680
29	4·15	1,810	3·35	1,240	3·55	1,360	3·6	1,390	3·55	1,360	....	690
30	4·12	1,780	3·35	1,240	3·5	1,330	3·6	1,390	3·45	1,300	....	700
31	4·05	1,720	3·3	1,220	....	....	3·7	1,450	....	....	....	710

MONTHLY DISCHARGE of Elk River, near Elko, B.C. for 1914.

(Drainage area, 1,600 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
April	3,240	930	1,950	1·22	1·36	116,000	C
May	8,290	3,380	5,820	3·63	4·18	358,000	C
June	11,300	3,460	6,230	3·89	4·34	371,000	C
July	4,560	1,720	3,050	1·91	2·20	188,000	B
August	1,720	1,220	1,470	0·92	1·06	90,400	A
September	1,600	1,120	1,260	0·79	0·88	75,000	A
October	2,060	1,330	1,500	0·94	1·08	92,200	A
November	2,660	1,270	1,660	1·04	1·16	98,800	A
December	1,220	....	847	0·53	0·61	52,100	.

GOLD CREEK, NEAR NEWGATE (3047).

Location.—At highway bridge, half-a-mile from mouth, opposite Flagstone, and 7 miles from international boundary line at Newgate, south-east Kootenay. Cranbrook district.

Records Available.—May to August, 1914.

Climatic Conditions.—Winters, severe, with light snowfall. Summers, hot and dry.

Gauge.—Wooden staff, 4 feet long, located on downstream side of bridge. Gauge is read three times a week by Mr. F. Neuendorp.

Channel.—Fairly smooth, unbroken, gravel bar below.

Discharge Measurements.—Five-well distributed measurements were made from the bridge in 1914.

Accuracy.—The measurements are very reliable. Three gauge readings a week are obtained. The gauge-height-discharges curve is very good. Accuracy during high water, 15 per cent, during low water, 10 per cent.

Co-operation.—This section was maintained in 1914 by co-operation with the Water Rights Branch (Provincial).

General.—Gold creek rises in the hills south of Cranbrook and flows in a south-easterly direction for about 35 miles, discharging into Kootenay river opposite Flagstone, and about 7 miles above the international boundary line. The drainage area is about 230 square miles. The precipitation throughout the drainage is very light, probably not exceeding 20 inches. Gold creek may be termed an irrigation stream.

DISCHARGE MEASUREMENTS of Gold Creek, near Flagstone, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 17 ...	D. O. B G., R. H. H.	1048	63·5	192	5·97	2·35	1,150
June 18.....	D. O. B. G., H. B. H........	1048	60	112	3·02	1·35	339
July 11.....	R. H. H. (Prov.).	....	62	744	1·65	0·75	123
July 28.. ..	D. O'B. G., R. H. H	1929	62	48·45	1·11	0·37	53·8
Sept. 11....	H B H. (Prov.)	......	....	30·0	0·69	0·05	20·6

DAILY GAUGE HEIGHT AND DISCHARGE of Gold Creek, near Gateway, for 1914.

Day	May.		June.		July.		August.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge.
	Feet	Sec.-ft.	Feet.	Sec.-ft	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·75	595	..	646		172		46
2		793	1·9	710		169		43
3	22·2	990		710	0·9	160	0·25	40
4		920		710		184		40
5	2·05	845	1·9	710	1·05	210	0·25	40
6		800		640		175		37
7		755	1·65	525	0·85	148	0·20	35
8	1·9	710		460		140		37
9		800	1·45	398		134	0·25	40
10	2·1	890		381	0·75	123		38
11	.	890		360		123	0·20	35
12		845	1·35	344	0·75	123		32
13	2·05	845		344		123	.	30
14		960	1·35	344		111	0·10	26
15	2·3	1,100	1·35	344	0·70	111	.	26
16		1,160	1·3	317		100	0·10	26
17	2·4	1,210		302	0·60	90	.	40
18		1,130	1·25	294		87	0·40	60
19		1,030		280	0·55	82		50
20	2·15	940		266		78	0·25	40
21		910	1·15	250	0·50	75	.	57
22	2·1	890		238		75	0·50	75
23		910	1·1	230		68	. .	50
24		920		280	0·45	68	0·15	30
25	2·15	940		338	.	64	...	28
26		845		398	0·40	60	0·10	26
27	1·95	755		317	.	57	.	29
28		686		250	0·35	53	0·15	30
29	1·8	630		210		53		28
30		616		175	0·35	53	0·10	26
31	1·75	595	.	.	.	49		26

MONTHLY DISCHARGE of Gold Creek, near Gateway, for 1914.

(Drainage area, 230 square miles.)

Month	Discharge in Second-Feet				Run-Off		Accuracy.
	Maximum	Minimum	Mean	Per Square Mile	Depth in inches on Drainage	Total in Acre-feet.	
May	1,210	595	868	3·78	4·36	53,400	C.
June	710	175	392	1·70	1·90	23,300	C.
July	210	49	107	0·46	0·53	6,580	B.
August	60	26	37·6	0·16	0·18	2,310	B.

KOOTENAY RIVER, NEAR WARDNER (3041).

Location.—At the highway bridge near Wardner, above the mouth of Elk river, below the mouths of Bull and St. Mary's rivers and about 35 miles from the international boundary line. Cranbrook district.

Records Available.—April to December, 1914.

Climatic Conditions.—The precipitation at Wardner in 1914 was about 17 inches. The summers are hot and dry and the winters are severe. Cold spells, a week or two in duration, occur, when the temperature will go down to -30° F (and in some cases the thermometer has gone down to -50° F.) The river is generally affected by ice from December to March. Frazil ice is prevalent.

Gauge.—A vertical staff gauge, 12 feet long, is read daily by Mrs. C. Barnes, of Wardner.

Channel.— The channel is straight and uniform, but piles have been driven down the centre of the river for logging purposes.

Discharge Measurements.—One measurement in 1913, and nine in 1914, were made from the traffic bridge.

Accuracy.—Daily gauge readings are obtained, reliable measurements were made, and the gauge height discharge curve is very good. The results should be within 5 per cent.

General.—Kootenay river rises in the Beaverfoot range of the Rockies, in township 24, range 16, west 5th meridian, and flows in a south by southeasterly direction through Wardner, a distance of about 100 miles. The valley of the Kootenay is broad and fertile, and is gradually being opened for agricultural developments. The fall of the river is very gradual, and will not be used for power between Canal Flats and Wardner. The river is most suitable for logging, and each year drives come down from valuable limits at the headwaters.

DISCHARGE MEASUREMENTS of Kootenay River, near Wardner, for 1913-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1913			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Nov. 23	C. E. W., C. E. R.	1,048	460	2,100	1·64	2·00	3,460
1914							
May 19	D. O. B. G., R. H. H.	1,048	482	4,860	4·83	8·00	23,500
June 7	" "	1,048	482	4,840	4·85	8·00	23,500
" 15	" "	1,048	483	5,450	5·55	9·30	30,200
" 20	" "	1,048	488	6,070	6·41	10·65	38,900
July 25	" "	1,929	467	3,350	3·38	5·00	11,300
" 31	" "	1,929	467	3,210	3·33	4·70	10,700
Oct 7	" "	1,929	464	2,490	2·08	2·95	5,210
" 13	" "	1,929	465	2,460	2·11	2·88	5,180
Dec. 13	J. A. E., C. B. C.	1,969	134	774	2·11	1·7	1,637[1]

[1] Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River, near Wardner, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·1	1,000	1·2	1,200	1·0	800	1·05	900	4·1	8,700	6·95	18,400
2	1·1	1,000	1·2	1,200	1·0	800	1·05	900	4·85	11,000	8·30	24,800
3	1·1	1,000	1·3	1,400	1·0	800	1·05	900	6·25	15,800	9·65	32,400
4	1·2	1,200	1·4	1,700	1·0	800	1·00	800	6·85	18,000	10·75	39,500
5	......	1,200	1·4	1,700	1·0	800	1·0	800	6·3	15,900	11·25	43,000
6	......	1,200	......	1,700	1·0	800	1·1	1,000	5·75	14,000	9·25	30,000
7	......	1,200	......	1,700	0·9	600	1·3	1,400	5·40	12,600	8·20	24,300
8	......	1,200	......	1,700	1·0	800	1·75	2,600	5·07	11,600	8·40	25,300
9	......	1,200	......	1,700	1·0	800	1·8	2,700	5·47	12,900	7·35	20,200
10	......	1,200	......	1,700	1·0	800	1·9	2,900	6·10	15,200	6·50	16,600
11	......	1,200	......	1,700	1·0	800	2·0	3,200	6·3	15,900	6·35	16,000
12	......	1,200	......	1,700	1·0	800	2·15	3,600	6·3	15,900	6·80	17,800
13	......	1,200	......	1,700	0·95	700	2·5	4,400	6·3	15,900	7·45	20,600
14	......	1,200	......	1,700	0·95	700	2·85	5,300	6·65	17,200	8·4	25,300
15	......	1,200	......	1,700	1·00	800	2·97	5,610	7·52	21,000	9·35	30,600
16	......	1,200	......	1,700	1·10	1,000	3·25	6,400	8·2	24,300	9·9	33,800
17	......	1,200	......	1,700	1·10	1,000	3·32	6,540	8·32	24,900	10·42	37,200
18	......	1,200	......	1,700	1·10	1,000	3·2	6,300	8·4	25,300	10·77	39,600
19	1·2	1,200	1·3	1,400	1·10	1,000	3·15	6,150	8·07	23,600	11·02	41,300
20	1·2	1,200	1·2	1,200	1·05	900	3·72	7,560	7·65	21,600	10·65	38,800
21	1·2	1,200	1·3	1,400	1·05	900	4·0	8,400	7·3	20,000	9·58	32,000
22	1·1	1,000	1·3	1,400	1·05	900	3·82	7,860	7·15	19,400	8·4	25,300
23	1·1	1,000	1·1	1,000	1·05	900	3·7	7,500	7·37	20,300	7·45	20,600
24	1·0	800	1·0	800	1·05	900	3·7	7,500	7·55	21,200	6·87	18,100
25	0·9	600	1·0	800	1·05	900	3·8	7,800	7·8	22,300	6·7	17,400
26	1·0	800	1·0	800	1·05	900	3·85	7,950	7·85	22,600	7·42	20,500
27	1·1	1,000	1·0	800	1·05	900	3·80	7,800	7·3	20,000	7·42	20,500
28	1·1	1,000	1·0	800	1·05	900	3·80	7,800	6·85	18,000	7·27	19,900
29	1·1	1,000	......	......	1·05	900	3·70	7,500	6·3	15,900	7·32	20,100
30	1·1	1,000	......	......	1·05	900	3·70	7,500	5·97	14,700	7·60	21,400
31	1·2	1,200	......	......	1·05	900	......	......	6·10	15,200	....	...

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River, near Wardner, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	7·9	22,700	4·70	10,500	2·98	5,640	3·22	6,340	2·92	5,460	2·05	3,350
2	8·4	25,300	4·85	11,000	2·88	5,360	3·17	6,210	3·4	6,700	1·92	2,960
3	8·8	27,400	4·82	10,900	2·82	5,240	3·22	6,340	3·37	6,640	1·95	3,050
4	9·07	29,000	4·72	10,600	2·85	5,300	3·22	6,340	3·27	6,440	1·97	3,110
5	9·27	30,200	4·67	10,400	2·85	5,300	3·12	6,060	3·23	6,360	1·90	2,900
6	9·15	29,500	4·45	9,750	2·85	5,300	3·02	5,760	3·39	6,680	1·85	2,800
7	8·88	27,900	4·35	9,450	2·72	5,040	2·95	5,550	3·25	6,400	1·80	2,700
8	8·42	25,400	4·45	9,750	2·70	5,000	2·92	5,460	3·02	5,760	1·75	2,600
9	8·07	23,600	4·25	9,150	2·75	5,100	2·88	5,360	2·92	5,460	1·75	2,600
10	7·8	22,300	3·97	8,310	2·70	5,000	2·92	5,460	2·8	5,200	1·67	2,440
11	7·55	21,200	3·80	7,800	2·02	4,760	2·95	5,550	2·77	5,140	1·45	1,850
12	7·40	20,400	3·80	7,800	2·55	4,550	2·95	5,550	2·8	5,200	1·50	2,000
13	7·52	21,000	3·75	7,650	2·65	4,850	2·87	5,340	2·77	5,140	1·07	940
14	8·00	23,300	3·72	7,560	2·58	4,640	2·82	5,240	2·7	5,000	1·02	840
15	7·97	23,000	3·72	7,560	2·50	4,400	2·82	5,240	2·5	4,400	......	1,000
16	7·67	21,800	3·7	7,500	2·55	4,550	2·90	5,400	2·3	3,900	......	1,160
17	6·87	18,100	3·7	7,500	2·53	4,490	2·90	5,400	2·15	3,600	......	1,320
18	6·35	16,000	3·67	7,410	2·65	4,850	2·95	5,550	2·12	3,540	......	1,480
19	6·32	16,000	3·53	7,060	3·00	5,700	3·12	6,060	2·35	4,000	......	1,640
20	6·27	15,800	3·4	6,700	3·60	7,200	3·25	6,400	2·2	3,700	......	1,600
21	6·32	16,000	3·4	6,700	3·55	7,100	3·15	6,150	2·2	3,700	......	1,600
22	5·9	14,400	3·37	6,640	3·32	6,540	3·00	5,700	2·3	3,900	......	1,600
23	5·35	12,400	3·40	6,700	3·17	6,210	2·90	5,400	2·3	3,900	......	1,600
24	5·05	11,600	3·3	6,500	3·02	5,760	2·77	5,140	2·3	3,900	......	1,600
25	5·00	11,400	3·22	6,340	3·12	6,060	2·72	5,040	2·25	3,800	......	1,600
26	5·05	11,600	3·1	6,000	3·25	6,400	2·73	5,060	2·2	3,700	......	1,600
27	4·92	11,200	3·07	5,910	3·42	6,760	2·65	4,850	2·22	3,740	......	1,600
28	4·87	11,000	3·05	5,850	3·67	7,410	2·60	4,700	2·2	3,700	......	1,600
29	4·85	11,000	3·00	5,700	3·65	7,350	2·60	4,700	2·2	3,700	......	1,600
30	4·77	10,700	2·98	5,640	3·42	6,760	2·60	4,700	2·17	3,640	......	1,600
31	4·70	10,500	3·08	5,940	....	......	2·62	4,760	......	......	......	1,600

MONTHLY DISCHARGE of Kootenay River, near Wardner, for 1914.

(Drainage area, 5,200 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.	
January	1,200	600	1,100	0·21	0·24	67,600	
February	1,700	800	1,420	0·27	0·28	78,900	
March	1,000	600	852	0·16	0·18	52,400	B.
April	8,400	800	4,920	0·95	1·06	293,000	B.
May	25,300	8,700	18,100	3·48	4·01	1,110,000	A.
June	43,000	17,400	26,400	5·08	5·67	1,570,000	A.
July	30,200	10,500	19,100	3·67	4·23	1,170,000	A.
August	11,000	5,640	7,820	1·50	1·73	481,000	A.
September	7,410	4,400	5,620	1·08	1·20	334,000	A.
October	6,400	4,700	5,510	1·06	1·22	339,000	A.
November	6,700	3,540	4,750	0·91	1·02	283,000	A.
December	3,350	840	1,940	0·37	0·43	119,000	

LINKLATER CREEK, NEAR NEWGATE (3045).

Location.—At Smith's ranch, 6 miles north of international boundary line; at Newgate, 4 miles from mouth of Gold creek. Cranbrook district.

Records Available.—May to September, 1913.

Climatic Conditions.—The precipitation is light, generally not in excess of 20 inches. The summers are hot and dry. Winters are severe, during some cold spells the thermometer going down to -40° F.

Gauge.—Three-foot vertical staff gauge, nailed to bridge. Mr. Jas. Bean reads gauge daily.

Channel.—Moderately swift, fairly smooth, and unbroken.

Discharge Measurements.—Five well-distributed measurements were made in 1914.

Co-operation.—This station was maintained by co-operation between the Provincial Water Rights Branch and the British Columbia Hydrographic Survey.

Accuracy.—Daily gauge readings are obtained, the measurements should be accurate. The results are within 15 per cent.

General.—Linklater creek is a small irrigation stream, about 15 miles long, flowing from the northwest into Kootenay river near Newgate. The drainage area is about 40 square miles (as obtained from the only available maps.)

DISCHARGE MEASUREMENTS of Linklater Creek, near Smith's ranch, Gateway, for 1914.

Date	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.		Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.	
May 17	D. O. B. G., R. H. H. ...	1,048	20·0	30·0	3·30	1·30	99·0
June 18	" H. D. H. ...	1,048	20·0	21·5	2·66	0·85	57·1
July 11	R. H. H. (Prov.)	...	20·0	13·0	1·66	0·50	21·7
July 28	D. O. B. G., R. H. H. ...	1,909	20·0	10·6	1·35	0·40	14·3
Sept 11	H. B. H. (Prov.)..... ...	...	...	8·70	1·41	0·30	12·3

Daily Gauge Height and Discharge of Linklater Creek, near Gateway, for 1914.

Day.	May		June		July		August		September	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·6	30·0	1·1	77·0	0·60	30·0	0·33	12·8	0·28	10·9
2	0·8	48·0	1·3	96·0	0·55	26·0	0·33	12·8	0·28	10·9
3	1·0	67·0	1·35	100·0	0·55	26·0	0·32	12·4	0·28	10·9
4	0·9	58·0	1·25	91·0	0·55	26·0	0·32	12·4	0·28	10·9
5	0·75	43·5	1·1	77·0	0·63	32·7	0·32	12·4	0·29	11·2
6.	0·70	39·0	1·0	67·0	0·55	26·0	0·32	12·4	0·29	11·2
7.	0·75	43·5	0·85	53·0	0·50	22·0	0·32	12·4	0·29	11·2
8	0·70	39·0	0·8	48·0	0·50	22·0	0·33	12·8	0·30	11·5
9.	0·90	58·0	0·75	43·5	0·47	20·2	0·34	13·3	0·30	11·5
10	0·90	58·0	0·75	43·5	0·45	19·0	0·32	12·4	0·30	11·5
11.	0·85	53·0	0·75	43·5	0·45	19·0	0·31	12·0	0·30	11·5
12.	0·85	53·0	0·85	53·0	0·45	19·0	0·30	11·5	0·30	11·5
13.	0·85	53·0	0·9	58·0	0·50	22·0	0·30	11·5	0·30	11·5
14.	1·0	67·0	0·9	58·0	0·45	19·0	0·29	11·2	0·30	11·5
15.	1·2	86·0	0·9	58·0	0·45	19·0	0·28	10·9	0·30	11·5
16.	1·25	91·0	0·9	58·0	0·40	16·0	0·28	10·9	0·31	12·0
17	1·3	96·0	0·9	58·0	0·40	16·0	0·55	26·0	0·34	13·3
18	1·2	86·0	0·85	53·0	0·40	16·0	0·45	19·0	0·37	14·6
19	1·2	86·0	0·80	48·0	0·40	16·0	0·35	13·8	0·40	16·0
20	1·1	77·0	0·75	43·5	0·40	16·0	0·33	12·8	0·40	16·0
21	1·05	72·0	0·73	41·7	0·40	16·0	0·35	13·8	0·37	14·6
22.	1·1	77·0	0·65	34·5	0·38	15·1	0·33	12·8	0·32	12·4
23	1·15	81·5	0·70	39·0	0·37	14·6	0·30	11·5	0·31	12·0
24.	1·2	86·0	0·75	43·5	0·37	14·6	0·35	13·8	0·30	11·5
25.	1·25	91·0	0·92	59·8	0·38	15·1	0·30	11·5	0·30	11·5
26.	1·1	77·0	0·80	48·0	0·38	15·1	0·30	11·5	0·29	11·2
27	0·95	62·5	0·70	39·0	0·37	14·6	0·29	11·2	0·29	11·2
28	0·9	58·0	0·70	39·0	0·35	13·8	0·29	11·2	0·30	11·5
29.	0·85	53·0	0·65	34·5	0·35	13·8	0·29	11·2	0·30	11·5
30.	0·95	62·5	0·60	30·0	0·35	13·8	0·29	11·2	0·30	11·5
31	1·0	67·0			0·33	12·8	0·29	11·2		

Monthly Discharge of Linklater Creek, near Newgate, for 1914.

(Drainage area 42 square miles.)

Month.	Discharge in Second-Feet.				Run-Off	
	Maximum.	Minimum.	Mean	Per square mile.	Depth in inches on Drainage area	Total in acre-feet.
May.	96	30	65·5	1·56	1·80	4,030
June	100	30	54·4	1·30	1·45	3,240
July	32·7	12·8	19·0	0·45	0·52	1,170
August	26·0	11·2	12·8	0·30	0·35	787
September	15·0	10·9	12·0	0·29	0·32	714

Accuracy "C."

Mark Creek, near Marysville (3037).

Location.—At the mouth of the creek near Marysville, about 14 miles from Cranbrook. Cranbrook district.

Records Available.—May to December, 1914.

Climatic Conditions.—At Marysville the precipitation each year is a little greater than at Cranbrook, which in 1914 was 16 inches. The summers are hot and dry. The winters are severe. Cold spells lasting for a week or so often occur, when the thermometer may reach -40° F. and -50° F. The creek freezes over in November or December and remains frozen till March. Frazil ice is present.

Gauge.—An enamel gauge, 6 feet long, is read daily by Mr. W. M. Burdette, of Marysville.

Channel.—Straight, rocky, and water is generally broken. The section may fill but the control appears permanent.

Discharge Measurements.—Eight well-distributed measurements were made in 1914.

Co-operation.—This station was maintained by co-operation between the British Columbia Hydrographic Survey and the Water Rights Branch of the province.

Accuracy.—The measurements are fair, daily readings are obtained, and the gauge heights discharge curve seems very good. The results should be within 10 per cent.

General.—Mark creek is a stream about 15 or 20 miles long, flowing from the northwest into St. Mary's river near Marysville. The drainage area is about 90 square miles (as estimated from the only available maps). Near Kimberley is the Sullivan mine, where large quantities of silver-lead ore is mined and shipped to Trail smelter. This company has a water-power development on Mark creek. At present about 350 horse-power is developed during the summer months. The head it is anticipated, will soon be increased.

There are other valuable mining claims in Mark creek drainage which, when developed, may tend to increase the importance of this little stream.

DISCHARGE MEASUREMENTS of Mark Creek, near Marysville, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 1	H. B. H. & C. E. R.	1,048	20	41·4	2·66	1·68	110
May 28	D. O'B. G.	1,530	25	57·9	4·08	2·2	236
July 3	H. B. H. (Prov.)	..	24	55·4	4·02	2·1	223
July 24	D. O.'B. G., H. B. H.	1,929	16	34·1	1·92	1·4	56·4
Sept. 1	H. B. H. (Prov.)	....	......	22·2	·77	1·00	17·2
Sept. 29	"	......	......	26·2	1·05	1·20	27·4
Oct. 10	D. O. B. G	1,929	19·5	28·4	0·86	1·125	24·2
Oct. 16	"	1,929	19·5	29·4	0·99	1·22	29·1

DAILY GAUGE HEIGHT AND DISCHARGE of Mark Creek, at Marysville, B.C., for 1914.

Day.	May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·70	112	2·56	354
2	1·85	171	2·76	428
3	2·10	210	3·01	527
4	2·0	184	2·90	483
5	1·9	158	2·56	354
6	1·81	136	2·41	303
7	1·71	114	2·14	221
8	1·75	122	2·05	197
9	2·0	184	2·00	184
10	1·99	181	1·96	174
11	1·98	179	1·94	168
12	2·01	187	1·98	179
13	2·08	205	2·08	205
14	2·24	250	2·41	303
15	2·48	325	2·52	339
16	2·59	364	2·63	379
17	2·6	368	2·69	401
18	2·54	346	2·67	394
19	2·47	322	2·55	350
20	2·38	293	2·33	277
21	2·37	290	2·13	218
22	2·36	286	1·96	174
23	2·37	290	1·86	148
24	2·43	310	1·79	132
25	2·38	293	2·05	197
26	2·45	316	2·23	247
27	2·37	290	2·05	197
28	2·22	244	2·00	184
29	2·08	205	2·00	184
30	2·10	210	2·00	184
31	2·25	253		

DAILY GAUGE HEIGHT AND DISCHARGE of Mark Creek, at Marysville, B.C., for 1914—*Concluded.*

Day	July		August		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.
1	2·02	189	1·27	38·1	1·07	17·9	1·12	21·8	1·20	29·0	1·22	31·6
2	2·06	206	1·2	29·0	1·07	17·9	1·14	23·6	1·27	38·1	1·17	26·3
3	2·12	215	1·2	29·0	1·07	17·9	1·18	27·2	1·20	29·0	1·20	29·0
4	2·11	213	1·18	27·2	1·07	17·9	1·19	28·1	1·23	32·9	1·26	36·8
5	2·14	221	1·18	27·2	1·04	15·8	1·19	28·1	1·26	36·8	1·23	32·9
6	2·02	189	1·18	27·2	1·04	15·8	1·19	28·1	1·25	35·5	1·19	28·1
7	1·9	158	1·16	25·4	1·08	18·6	1·19	28·1	1·21	30·3	1·12	21·8
8	1·82	139	1·18	27·2	1·10	20·0	1·16	25·4	1·21	30·3	1·56	21·0
9	1·77	128	1·12	21·8	1·08	18·6	1·16	25·4	1·23	32·9	2·10	20·0
10	1·72	118	1·17	26·3	1·08	18·6	1·18	27·2	1·18	27·2	2·25	20·0
11	1·69	110	1·17	26·3	1·08	18·6	1·18	27·2	1·19	28·1	2·45	19·0
12	1·65	102	1·17	26·3	1·08	18·6	1·20	29·0	1·17	26·3	2·50	18·0
13	1·77	127	1·16	25·4	1·06	17·2	1·17	26·3	1·16	25·4	2·55	17·0
14	1·84	144	1·12	21·8	1·06	17·2	1·17	26·3	1·15	24·5	2·60	16·0
15	1·67	106	1·13	22·7	1·09	19·3	1·20	29·0	1·15	24·5	Frozen	15·3
16	1·60	92·0	1·13	22·7	1·12	21·8	1·20	29·0	1·15	24·5		15·0
17	1·53	78·7	1·16	25·4	1·08	17·6	1·15	24·5	1·17	26·3		15·0
18	1·50	71·0	1·17	26·3	1·10	20·0	1·18	27·2	1·17	26·3		15·0
19	1·42	59·4	1·12	21·8	1·19	28·1	1·23	32·9	1·18	27·2		15·0
20	1·45	64·5	1·13	22·7	1·18	27·2	1·24	34·2	1·20	29·0		16·0
21	1·41	57·7	1·11	20·9	1·15	24·5	1·22	31·6	1·20	29·0		16·0
22	1·40	56·0	1·10	20·0	1·10	20·0	1·18	27·2	1·17	26·3		17·0
23	1·40	56·0	1·08	18·6	1·11	20·9	1·16	25·4	1·20	29·0		17·0
24	1·37	51·8	1·08	18·3	1·11	20·9	1·16	25·4	1·20	29·0		18·0
25	1·32	44·8	1·08	18·6	1·14	23·6	1·11	20·9	1·21	30·3		18·0
26	1·35	49·0	1·08	18·6	1·19	28·1	1·16	25·4	1·20	29·0		18·0
27	1·34	47·6	1·08	18·6	1·19	28·1	1·20	29·0	1·18	27·2		18·0
28	1·31	43·4	1·07	17·9	1·19	28·1	1·20	29·0	1·17	26·3		18·0
29	1·30	42·0	1·07	17·9	1·16	25·4	1·20	29·0	1·16	25·4		18·0
30	1·29	40·7	1·07	17·9	1·15	25·4	1·20	29·0	1·21	30·3		18·0
31	1·26	36·8	1·07	17·9			1·20	29·0				18·0

MONTHLY DISCHARGE of Mark Creek, at Marysville, B.C., for 1914.

Drainage area 90 square miles

Month	Discharge in Second-Feet				Run-Off.		Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on Drainage area	Total in acre-feet.	
May	368	112	238	2·64	3·04	14,600	B
June	527	132	270	3·0	3·55	16,100	"
July	221	36·8	105	1·17	1·35	6,460	"
August	38·1	17·9	23·4	0·26	0·30	1,440	"
September	28·1	15·8	21·0	0·23	0·26	1,250	"
October	34·2	21·8	27·4	0·30	0·35	1,680	"
November	38·1	24·5	28·9	0·32	0·36	1,720	"
December	36·8		20·1	0·22	0·25	1,240	

MUD CREEK, NEAR ELKO (3044).

Location.—Two and one-half miles above Rock creek mill, near Elko. Cranbrook district.

Records Available.—June to September, 1914.

Climatic Conditions.—Similar to Elko. (See Elk river.)

Gauge.—Three-foot enamel gauge, nailed to an old bridge, about one-half mile above Rock Creek mill. Read four or five times a week by Mr. H. B. Stiven, of Elko.

Channel.—Sluggish. Not very uniform.

Discharge Measurements.—Four measurements were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated in 1914.

Accuracy.—Not guaranteed.

General.—Mud creek is a small irrigation stream, tributary to Rock creek, near Elko. The discharge of Mud creek, plus that of Rock creek, gives the discharge of Rock creek at the Rock Creek Lumber Company's dam.

DISCHARGE MEASUREMENTS of Mud Creek, near Baynes, for 1914.

Date.	Hydrographer	Meter No	Width	Area of Section	Mean Velocity.	Gauge Height	Discharge
			Feet	Sq. ft	Ft. per sec	Feet	Sec.-ft
1914							
May 18	D. O'B. G., R. H. H.	1,048	8·5	10·0	2·27	2·05	22·7
July 12	R. H. H. (Prov.)		8·1	8·9	1·94	1·70	17·3
" 29	D. O'B. G., R. H. H.	1,929	8·1	7·9	1·50	1·40	11·9
Sept. 14	H. B. H. (Prov.)			7·13	1·22	1·20	8·68

DAILY GAUGE HEIGHT AND DISCHARGE of Mud Creek, near Elko, for 1914.

Day	May		June.		July.		August.		September	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft	Feet	Sec.-ft	Feet.	Sec.-ft	Feet	Sec.-ft	Feet	Sec.-ft
1				22·8	1·8	18·4		11·8	1·20	8·7
2			2·1	23·7		17·6	1·4	11·8		8·4
3			2·1	23·7	1·7	16·7	1·35	11·0	1·15	8·0
4			2·1	23·7	1·8	18·4		11·0	1·15	8·0
5				24·2		18·4	1·35	11·0	1·15	8·0
6			2·15	24·6	1·8	18·4		10·6	1·15	8·0
7				24·6		17·6	1·3	10·2		8·0
8			2·15	24·6	1·7	16·7	1·3	10·2	1·15	8·0
9				24·1		17·6		10·2		8·0
10			2·1	23·7	1·8	18·4	1·3	10·2	1·15	8·0
11			2·1	23·7	1·6	15·0		9·8		8·0
12			2·0	21·9	1·65	15·8	1·25	9·4	1·15	8·0
13			1·95	21·0		15·4		9·4	1·15	8·0
14			1·95	21·0	1·6	15·0	1·25	9·4		8·4
15				21·0		14·6	1·25	9·4	1·20	8·7
16			1·95	21·0	1·55	14·2	1·25	9·4		8·7
17			1·95	21·0		14·6		9·4	1·20	8·7
18	2·05	22·8		21·4	1·6	15·0	1·25	9·4		9·0
19	2·1	23·7	2·0	21·9		14·6		9·4	1·25	9·4
20	2·1	23·7	2·0	21·9	1·55	14·2	1·25	9·4	1·25	9·4
21		23·2		15·6		13·8		9·0	1·25	9·4
22	2·05	22·8	1·25	9·4	1·5	13·4	1·2	8·7		9·4
23		22·8		9·0		13·4		8·7	1·25	9·4
24	2·05	22·8	1·2	8·7	1·5	13·4	1·2	8·7		9·4
25		22·8		8·4	1·55	14·2		8·7	1·25	9·4
26	2·05	22·8	1·15	8·0	1·5	13·4	1·2	8·7	1·30	10·2
27		23·7	1·5	[illegible]		13·0		8·7	1·30	10·2
28	2·15	24·6	1·9	20·1	1·45	12·6	1·2	8·7	1·30	10·2
29		24·1	2·0	21·9		12·2	1·2	8·7		10·2
30	2·1	23·7	1·8	18·4	1·4	11·8		8·7	1·30	10·2
31.	2·0	21·9			1·4	11·8		8·7		...

MONTHLY DISCHARGE of Mud Creek, near Elko, for 1914.

(Drainage area, 7 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June	24·6	8·0	19·5	2·78	3·10	1,160
July	18·4	11·8	15·1	2·15	2·48	928
August	11·8	8·7	9·62	1·37	1·58	596
September	10·2	8·0	8·84	1·26	1·41	526

PHILLIPS CREEK, NEAR ROOSVILLE (3046).

Location.—Fifteen hundred feet above road, near Roo's ranch, Roosville. Cranbrook district.

Records Available.—May to November, 1914.

Climatic Conditions.—Summers, hot and dry. Winters severe, as low as –40° F. during cold spells some seasons. Similar to Elko (see E iver).

Gauge.—Wooden staff gauge, read by Mr. Fred Roo, of Roosville.

Channel.—Fairly uniform and smooth. Good control.

Discharge Measurements.—Five measurements were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated during 1914.

Accuracy.—Daily gauge readings and fairly good measurements. Results should be within 15 per cent.

General.—Phillips creek is a small stream about 10 to 15 miles long, flowing from the east into Montana, about 4 miles from the mouth, and thence into Kootenay river. It is used for irrigation, and there is a fall on the creek above Roo's ranch, where a small industrial development might be installed.

DISCHARGE MEASUREMENTS of Phillips Creek, near Roosville, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 16	D. O'B. G., R. H. H.	1,048	16·5	23·3	3·36	1·80	78·4
June 17	D. O'B. G., H. B. H.	1,048	14·0	23·65	4·06	1·85	96·1
July 10	R. H. H. (Prov.)	..	13·0	14·6	2·21	1·40	32·2
" 27	D. O'B. G., R. H. H.	1,929	11·0	13·3	1·35	1·20	18·0
Sept. 10	H. B. H. (Prov.)	....	.	11·6	1·00	1·10	12·7

DAILY GAUGE HEIGHT AND DISCHARGE of Phillips Creek, near Roosville, for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1·4	33·0	2·05	115·0
2			1·55	47·5	2·15	134·0
3			1·6	53·0	2·0	106·0
4			1·6	53·0	1·95	98·5
5			1·55	47·5	1·9	91·0
6			1·55	47·5	1·9	91·0
7			1·5	42·0	1·8	76·0
8			1·55	47·5	1·8	76·0
9			1·6	53·0	1·7	64·0
10			1·65	58·5	1·6	53·0
16			1·65	58·5	1·7	64·0
12			1·65	58·5	1·7	64·0
13			1·7	64·0	1·75	70·0
14			1·75	70·0	1·7	64·0
15			1·8	76·0	1·85	83·5
16			1·8	76·0	1·9	91·0
17			1·9	91·0	1·85	83·5
18			1·9	91·0	1·85	83·5
19			1·85	83·5	1·8	76·0
20			1·8	76·0	1·7	64·0
21			1·8	76·0	1·7	64·0
22			1·8	76·0	1·6	53·0
23			1·9	91·0	1·7	64·0
24			2·0	106·0	1·6	53·0
25			2·0	106·0	1·95	98·5
26			1·9	91·0	1·8	76·0
27	1·3	25·0	1·85	83·5	1·7	64·0
28	1·35	29·0	1·8	76·0	1·65	58·5
29	1·35	29·0	1·7	64·0	1·6	53·0
30	1·4	33·0	1·7	64·0	1 6	53·0
31			1 95	98·5		

DAILY GAUGE HEIGHT AND DISCHARGE of Phillips Creek, near Roosville, for 1914.

DAY.	July.		August.		September.		October		November.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1·6	53·0	1·2	18·0	1·10	12·0	1·15	15·0	1·3	25·0
2	1·6	53·0	1·2	18·0	1·15	15·0	1·15	15·0	1·3	25·0
3	1·55	47·5	1·2	18·0	1·10	12·0	1·15	15·0	1·35	29·0
4	1·55	47·5	1·2	18·0	1·10	12·0	1·2	18·0	1·35	29·0
5	1·6	53·0	1·2	18·0	1·10	12·0	1·2	18·0	1·35	29·0
6	1·55	47·5	1·2	18·0	1·15	15·0	1·2	18·0	1·35	29·0
7	1·55	47·5	1·2	18·0	1·15	15·0	1·15	15·0	1·35	29·0
8	1·5	42·0	1·2	18·0	1·1	12·0	1·15	15·0	1·35	29·0
9	1·5	42·0	1·2	18·0	1·15	15·0	1·15	15·0	1·3	25·0
10	1·5	42·0	1·2	18·0	1·1	12·0	1·15	15·0	1·3	25·0
11	1·4	33·0	1·15	15·0	1·1	12·0	1·2	18·0	1·3	25·0
12	1·4	33·0	1·15	15·0	1·15	15·0	1·2	18·0	1·3	25·0
13	1·45	37·5	1·15	15·0	1·15	15·0	1·2	18·0	1·3	25·0
14	1·4	33·0	1·15	15·0	1·10	12·0	1·2	18·0	1·3	25·0
15	1·4	33·0	1·15	15·0	1·15	15·0	1·2	18·0	1·3	25·0
16	1·4	33·0	1·15	15·0	1·15	15·0	1·25	21·5	1·3	25·0
17	1·4	33·0	1·4	33·0	1·15	15·0	1·3	25·0	1·3	25·0
18	1·35	29·0	1·25	21·5	1·15	15·0	1·3	25·0	1·3	25·0
19	1·35	29·0	1·25	21·5	1·20	18·0	1·3	25·0	1·25	21·5
20	1·35	29·0	1·15	15·0	1·20	18·0	1·3	25·0	1·25	21·5
21	1·3	25·0	1·2	18·0	1·15	15·0	1·3	25·0	1·2	18·0
22	1·3	25·0	1·2	18·0	1·15	15·0	1·25	21·5		18·0
23	1·3	25·0	1·2	18·0	1·15	15·0	1·25	21·5		18·0
24	1·3	25·0	1·15	15·0	1·15	15·0	1·25	21·5		18·0
25	1·3	25·0	1·15	15·0	1·15	15·0	1·25	21·5		18·0
26	1·25	21·5	1·15	15·0	1·15	15·0	1·20	18·0		18·0
27	1·25	21·5	1·15	15·0	1·10	12·0	1·20	18·0		18·0
28	1·25	21·5	1·15	15·0	1·10	12·0	1·20	18·0		18·0
29	1·25	21·5	1·10	12·0	1·10	12·0	1·20	18·0		18·0
30	1·25	21·5	1·10	12·0	1·10	12·0	1·20	18·0		18·0
31	1·25	21·5	1·10	12·0			1·20	18·0		

MONTHLY DISCHARGE of Phillips Creek, near Roosville, for 1914.

(Drainage area, 23 square miles.)

MONTH	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum	Minimum	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
May	106	33	69·6	3·02	3·48	4,290
June	134	53	76·2	3·31	3·69	4,530
July	53	21·5	33·9	1·47	1·70	2,080
August	33	12·0	17·0	0·74	0·85	1,050
September	18	12·0	14·0	0·61	0·68	833
October	25	15·0	19·0	0·83	0·96	1,170
November	29		23·2	1·01	1·13	1,380
Accuracy "C"						

ROCK CREEK, NEAR ELKO (3049).

Location.—One-half mile above Rock mill, near Elko. Cranbrook district.

Records Available.—May to September, 1914.

Climatic Conditions.—Similar to Elko (see Elk river).

Gauge.—Two-foot wooden staff gauge, read four or five times a week by Mr. H. B. Stiven, of Elko.

Channel.—Smooth, with swift water. Good control.

Discharge Measurements.—Five measurements were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated in 1914.

Accuracy.—Results should be within 15 per cent.

General.—Rock creek is a small stream, about 15 miles long, flowing from the east into Kootenay river, about 10 miles south of Jaffray. The total drainage is about 40 square miles. The station is located above the mouth of Mud creek, and the total discharge of Rock and Mud creeks gives the discharge at Rock Creek Lumber Company's dam. The water is used for irrigation.

DISCHARGE MEASUREMENTS of Rock Creek, near Baynes, for 1914.

Date.		Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.				Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
May	18	D. O'B G., R. H. H	1048	18·5	40·6	2·06	1·30	82·8
June	19	D. O'B. G., H. B. H	1048	18·5	37·6	2·28	1·35	86·0
July	12	R. H. H. (Prov.)		18·5	29·3	1·78	0·85	52·1
July	29.	D. O'B. G	1929	18·5	23·6	1·35	0·53	31·9
Sept.	14.	H. B. H. (Prov.)			20·6	0·87	0·33	18·1

DAILY GAUGE HEIGHT AND DISCHARGE of Rock Creek, near Baynes, for 1914.

Day.	May.		June.		July.		August.		September.	
	Gauge. Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	......	31·9	......	76·1	1·15	73·7	0·5	28·5	0·35	19·2
2	0·55	31·9	1·3	82·9	......	69·8	0·5	28·5	......	19·2
3	......	43·8	1·4	89·7	1·05	65·9	......	27·4	0·35	19·2
4	0·9	55·7	1·45	93·1	1·0	62·5	......	26·4	0·35	19·2
5	1 0	62·5	......	91·4	......	64·2	0·45	25·2	0·35	19·2
6	1·0	62·5	1·4	89·7	1·05	65·9	......	23·6	0·35	19·2
7	......	62·5	......	84·6	......	60·8	0·4	22·0	......	19·2
8	1·0	62·5	1·25	79·5	0·90	55·7	0·45	25·2	0·35	19·2
9	......	63·3	......	79·5	......	55·7	......	25·2	......	19·2
10	......	64·1	1·25	79·5	0·90	55·7	0·45	25·2	0·35	19·2
11	......	64·9	1·35	79·5	0·85	52·3	......	25·2	......	19·2
12	1 05	65·9	1·2	76·1	0·85	52·3	0·45	25·2	0·35	19·2
13	1·15	73·7	1·15	73·7	......	48·9	......	23·6	0·30	16·4
14	1·15	73·7	1·15	73·7	0·75	45·5	0·4	22·0	......	17·8
15	1·25	79·5	......	76·6	......	45·5	0·4	22·0	0·35	19·2
16	1·25	79·5	1·25	79·5	0·75	45·5	0·4	22·0	......	19·2
17	1·3	82·9	1·3	82·9	......	43·8	......	22·0	0·35	19·2
18	1·3	82·9	......	86·3	0·70	42·1	0·4	22·0	......	19·2
19	1·3	82·9	1·4	89·7	......	40·4	......	22·0	0·35	19·2
20	1·35	86·3	1·35	86·3	0·65	38·7	0·4	22·0	0·35	19·2
21	......	84·6	......	108·6	......	38·7	......	20·6	0·35	19·2
22	1·3	82·9	2·0	131·0	0·65	38·7	0·35	19·2	......	20·6
23	......	82·9	......	129·0	......	37·0	......	19·2	0·40	22·0
24	1·3	82·9	1·95	128·0	0·6	35·3	0·35	19·2	......	22·0
25	......	82·9	......	128·0	0·6	35·3	......	19·2	0·40	22·0
26	1·3	82·9	1·95	128·0	0·6	35·3	0·35	19·2	0·40	22·0
27	......	81·2	1·9	124·0	......	33·6	......	19·2	0·45	23·2
28	1·25	79·5	1·25	79·5	0·55	31·9	0·35	19·2	0·45	25·2
29	......	81·2	......	76·6	......	31·9	0·35	19·2	......	25·2
30	1·3	82·9	1·15	73·7	0·55	31·9	......	19·2	0·45	25·2
31	1·1	69·3	......	......	0·5	28·5	......	19·2	......	......

MONTHLY DISCHARGE of Rock Creek, near Baynes, for 1914.

(Drainage area, 15 square miles.)

Month.	Discharge in Second-Feet.				Run-Off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total [illegible] acre-feet.	
May	86·3	31·9	71·2	4·75	5·40	4,380	C
June	131·0	73·7	91·9	6·12	6·83	5,470	D
July	73·7	28·5	47·2	3·15	3·63	2,900	C
August	28·5	19·2	22·5	1·50	1·73	1,380	B
September	25·2	16·4	20·3	1·35	1·51	1,210	B

BIG SAND CREEK, NEAR JAFFRAY (3042).

Location.—About 300 yards below highway and C.P.R. bridges, 2 miles from Galloway, near Jaffray. Cranbrook district.

Records Available.—May to September, 1914.

Climatic Conditions.—Summers, hot and dry. Winters severe, as low as -40° F. some seasons, with light snowfall. For further information see Elk river. The conditions at Elko are very similar.

Gauge.—Five-foot wooden staff gauge, read daily by Mr. N. Craigie.

Channel.—Uniform and smooth, with swift water. Good control.

Discharge Measurements.—Five well-distributed measurements were made in 1914.

Co-operation.—This station was established by Mr. H. B. Hicks, Provincial Water Rights Branch, and maintained co-operatively by him and the British Columbia Hydrographic Survey.

Accuracy.—Mr. Hicks made a splendid section, late in 1913. The measurements are reliable, daily gauge readings were taken, and the gauge-height-discharge curve is good. The results should be within 5 per cent.

General.—Big Sand creek is an irrigation stream, about 20 miles long, flowing from the northeast into Kootenay river, south of Jaffray. The gauging station is about 8 miles from the mouth, and above the station the drainage area is about 40 square miles. As before stated, the water is used for irrigation.

DISCHARGE MEASUREMENTS of Big Band Creek, near Jaffray, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 19	D. O'B. G., R. H. H.	1048	38	93·8	5·44	2·3	511
June 19	D. O'B. G., H. B. H.	1048	38	81·5	4·53	2·0	369
July 9	R. H. H. (Prov.)		36	51·2	2·64	1·20	135
July 29	D. O'B. G., R. H. H.	1929	35	28·4	1·65	0·65	47·1
Sept. 9	H. B. H. (Prov.)			19·9	1·10	0·35	21·9

DAILY GAUGE HEIGHT AND DISCHARGE of Big Sand Creek, near Hanbury, for 1914.

Day.	May.		June.		July.		August.		September.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		615	2·1	415	1·5	205	0·58	40·2	0·18	9·0
2		615	2·35	535	1·6	233	0·55	37·5	0·19	9·5
3	2·5	615	2·5	615	1·55	219	0·52	34·8	0·16	8·0
4	2·35	535	2·45	588	1·45	191	0·50	33·0	0·18	9·0
5	1·95	355	2·3	510	1·4	177	0·47	30·6	0·18	9·0
6	1·75	282	2·15	438	1·4	177	0·47	30·6	0·16	8·0
7	1·95	355	1·85	316	1·35	166	0·45	29·0	0·18	9·0
8	2·2	460	1·75	282	1·3	155	0·45	29·0	0·22	11·4
9	2·35	535	1·65	249	1·2	133	0·42	26·6	0·28	15·6
10	2·4	560	1·5	205	1·1	113	0·42	26·6	0·25	13·5
11	2·35	535	1·65	[illegible]	1·0	95	0·4	25·0	0·28	15·6
12	2·25	485	1·65	249	1·0	95	0·4	25·0	0·25	13·5
13	2·15	438	1·85	316	0·95	87·5	0·37	22·6	0·25	13·5
14	2·35	535	2·15	438	1·05	103	0·37	22·6	0·20	10·0
15	2·55	642	2·15	438	1·05	103	0·35	21·0	0·22	11·4
16	2·7	730	2·15	438	1·0	95	0·35	21·0	0·30	17·0
17	2·6	670	2·15	438	0·9	80	0·32	18·6	0·41	25·8
18	2·55	642	2·2	460	0·9	80	0·37	22·6	0·61	43·3
19	2·5	615	2·1	415	0·96	89	0·37	22·6	0·88	77·4
20	2·4	560	2·05	395	0·91	81·5	0·37	22·6	1·02	98·6
21	2·4	560	1·85	316	0·83	70·9	0·35	21·0	0·90	80·0
22	2·5	615	1·75	282	0·8	67·0	0·35	21·0	0·88	77·4
23	2·4	560	1·65	249	0·78	64·6	0·35	21·0	0·80	67·0
24	2·35	535	1·4	177	0·75	61·0	0·30	17·0	0·80	67·0
25	2·15	438	1·5	205	0·72	57·4	0·28	15·6	0·76	62·2
26	2·2	460	1·65	249	0·70	55·0	0·25	13·5	0·70	55·0
27	2·15	438	1·65	249	0·67	51·1	0·24	12·8	0·70	55·0
28	2·0	375	1·6	233	0·65	48·5	0·25	13·5	0·65	48·5
29	1·75	282	1·65	249	0·62	44·6	0·22	11·4	0·60	42·0
30	1·75	282	1·65	249	0·61	43·3	0·25	13·5	0·60	42·0
31	2·0	375			0·6	42·0	0·19	9·5	.....	..

MONTHLY DISCHARGE of Big Sand Creek, near Hanbury, for 1914.

(Drainage area 40 square miles.)

Month	Discharge in Second-feet.				Run-off	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage [illegible].	Total in acre-feet.
May	730	282	506	12·7	14·6	31,100
June	615	177	348	8·7	9·71	20,700
July	233	42	106	2·65	3·06	6,520
August	40·2	9·5	22·9	0·57	0·66	1,410
September	98·5	8·0	34·1	0·85	0·95	2,030

Accuracy A.

LITTLE SAND CREEK, NEAR JAFFRAY (3043).

Location.—At small bridge, above Rosen's ranch, near Jaffray. Cranbrook district.

Records Available.—May to September, 1914.

Climatic Conditions.—See Big Sand creek.

Gauge.—Wooden staff gauge, nailed to the bridge, read daily by Andrew Rosen of Jaffray.

Channel.—Uniform. Water unbroken and swift. Control doubtful.

Discharge Measurements.—Five were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated in 1914.

Accuracy.—Results should be within 15 per cent.

General.—Little Sand creek, a tributary of Big Sand creek, is a small stream used extensively for irrigation.

DISCHARGE MEASUREMENTS of Little Sand Creek, near Jaffray, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May 15	D. O. B G., R. H. H.	1048	24·0	31·7	3·51	1·333	111
June 19	D. O. B. G., H. B. H.	1048	24·0	26·7	3·01	1·000	80·3
July 13	R. H. H. (Prov.)		24·0	26·9	3·05	0·875	82·0
July 29	D. O. B. G., R. H. H.	1929	24·0	14·7	2·04	0·158	30·0
Sept 14	H. B. H. (Prov.)			17·2	2·11	0·562	36·3

DAILY GAUGE HEIGHT AND DISCHARGE of Little Sand Creek, near Jaffray, for 1914.

Day	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.
	Feet	Sq. ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.
1			1·0	85·0	1·04	90·0
2			0·95	79·0	1·29	120·0
3			1·05	91·0	1·4	133·0
4			0·95	79·0	1·46	141·0
5			0·9	73·2	1·46	141·0
6			0·95	79·0	1·42	136·0
7			1·1	97·0	1·25	115·0
8			0·85	68·2	1·17	105·0
9			1·2	109·0	1·08	95·0
10			1·1	97·0	0·94	77·5
11			1·12	99·0	1·12	99·0
12			1·12	99·0	1·17	105·0
13			1·17	105·0	1·0	85·0
14			1·25	118·0	0·96	80·0
15			1·35	127·0	1·06	92·5
16			1·46	141·0	1·0	85·0
17			1·35	127·0	1·14	102·0
18			1·46	141·0	0·96	80·0
19			1·5	147·0	0·87	69·6
20			1·5	147·0	1·02	87·5
21			1·44	138·0	0·85	68·2
22			1·44	138·0	0·79	61·5
23			1·29	120·0	0·77	59·2
24			1·27	117·0	0·85	68·2
25			1·31	122·0	0·92	75·9
26	0·8	62·4	1·37	129·0	1·0	85·0
27	0·83	60·0	1·2	109·0	1·06	92·5
28	0·85	68·2	1·12	99·0	0·85	68·2
29	0·85	68·2	1·04	90·0	0·79	61·5
30	0·92	75·0	1·12	99·0	0·77	59·2
31			0·96	80·0		

DAILY GAUGE HEIGHT AND DISCHARGE of Little Sand Creek, near Jaffray, for 1914—*Concluded.*

Day.	July.		August.		September.	
	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0·637	50·3	0·645	46·1	0·312	19·7
2	0·666	48·3	0·416	26·3	0·312	19·7
3	0·812	63·7	0·437	27·8	0·552	37·0
4	0·687	50·3	0·645	46·1	0·604	42·1
5	0·604	42·1	0·572	39·2	0·308	19·5
6	0·791	61·5	0·416	26·3	0·283	18·3
7	0·625	44·1	0·398	24·7	0·301	19·1
8	0·625	44·1	0·398	24·7	0·593	40·9
9	0·625	44·1	0·398	24·7	0·791	61·5
10	0·582	38·1	0·604	42·1	0·687	50·3
11	0·250	34·2	0·583	40·1	0·520	34·2
12	0·500	32·5	0·604	42·1	0·666	48·3
13	0·708	52·5	0·583	40·1	0·687	50·3
14	0·520	34·2	0·554	37·3	0·479	30·8
15	0·509	32·5	0·562	38·1	0·520	34·2
16	0·514	33·3	0·416	26·3	0·479	30·8
17	0·479	30·8	0·395	24·7	0·544	36·1
18	0·489	31·6	0·437	27·8	0·520	34·2
19	0·479	30·8	0·562	38·1	0·479	30·8
20	0·625	44·1	0·510	33·4	0·500	33·2
21	0·625	44·1	0·363	22·4	0·401	25·3
22	0·439	30·8	0·364	22·6	0·416	26·3
23	0·437	27·8	0·333	20·7	0·395	24·7
24	0·437	27·8	0·343	21·2	0·354	21·9
25	0·437	27·8	0·333	20·7	0·416	26·3
26	0·416	26·3	0·333	20·7	0·437	27·8
27	0·604	42·1	0·372	20·2	0·437	27·8
28	0·437	27·8	0·312	19·7	0·408	25·6
29	0·416	26·3	0·312	19·7	0·408	25·6
30	0·458	29·3	0·312	19·7	0·384	23·8
31	0·770	59·2	0·312	19·7	......	......

MONTHLY DISCHARGE of Little Sand Creek, near Jaffray, for 1914.

(Drainage area 33 square miles.)

Month	Discharge in Second-Feet.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May	147	68·2	108	3·28	3·78	6,640
June	141	59·2	91·3	2·77	3·09	5,430
July	63·7	26·3	39·1	1·18	1·36	2,400
August	46·1	19·7	29·1	0·88	1·01	1,790
September	61·5	18·3	31·5	0·95	1·06	1,870

Accuracy "C."

ST. MARY'S RIVER, NEAR WYCLIFFE (3050).

Location.—At traffic bridge near Wycliffe, 12 miles from the mouth and 7 miles from Cranbrook. Cranbrook district.

Records Available.—April to December, 1914.

Climatic Conditions.—Climatic conditions near Wycliffe are very similar to those at Cranbrook. At Cranbrook, from December 1, 1913, to November

30, 1914, the precipitation was 16 inches. The summers are hot, windy and dusty, almost semi-arid. The winters are severe, with occasional cold spells a week or so duration, when the temperature may go as low as -40°F or -50°F. In December, 1914, engineers of the British Columbia Hydrographic Survey were doing field work around Cranbrook when the temperature was as low as -20°F. St. Mary's river freezes up in November or December and remains frozen till March. Frazil ice is prevalent.

Gauge.—Vertical staff gauge, read daily by the Otis Staples Lumber Company at Wycliffe.

Channel.—Straight, uniform, with smooth, swift water. Good control.

Discharge Measurements.—Mr. Hicks, District Engineer, Provincial Water Rights Branch, made several measurements in 1913, and in 1914 four measurements were made.

Accuracy.—Combining Mr. Hick's measurements and the 1914 measurements a very good gauge-height discharge curve has been obtained. The results should be within 10 per cent.

General.—The St. Mary's is a large river rising in the divide between Kootenay lake and Kootenay river in East Kootenay. It flows in an easterly direction, discharging into Kootenay river near Fort Steele, 50 miles above the international boundary line. It is about 50 miles long and drains in the neighbourhood of 1,100 square miles.

The St. Mary's river is at present used for logging purposes. The Otis Staples Lumber Company has a large mill at Wycliffe, and logs are driven from the timber limits near the source of the river to Wycliffe. Ore, particularly silver-lead and zinc, is found in large quantities in various parts of the drainage. The Sullivan mine, at Kimberley, had an output in 1914 of 36,000 tons, from which was obtained 550,000 ounces of silver and 25,000,000 pounds of lead. Power is obtained from Mark creek, a tributary of the St. Mary's.

On St. Mary's river there is a power site immediately above the gauging station near Wycliffe. A head of from 30 to 40 feet may be obtained, and a development of about 2,000 horse power may be installed at a fairly reasonable figure.

DISCHARGE MEASUREMENTS of St. Mary's River at Wycliffe, for 1914.

Date.	Hydrographer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height.	Discharge
1914.			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 30	D. O. B. G.	1,018	[illegible]	1,110	6·82	5·94	7,560
July 23	" H. B. H.	1,924	162	708	3·46	3·64	2,450
Oct. 10	"	1,929	148	454	1·95	1·9	878
Oct. 16.	"	1,929	148	452	1·94	1·9	877

DAILY GAUGE HEIGHT AND DISCHARGE of St. Mary's River near Wycliffe, for 1914

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	1·0	395	3·6	2,460	6·25	8,720
2	1·0	395	4·5	3,910	6·85	11,000
3	1·0	395	5·45	6,210	8·2	17,100
4	1·0	395	5·4	6,070	8·2	17,100
5	1·16	441	4·9	4,790	7·6	14,300
6	1·22	466	4·4	3,710	7·1	12,000
7	1·32	506	4·9	4,790	6·25	8,720
8	1·4	541	3·45	2,280	5·10	5,290
9	1·55	617	3·4	2,220	4·95	4,910
10	1·65	674	3·7	2,590	4·90	4,790
11	1·95	873	4·15	3,260	5·00	5,030
12	2·00	910	4·7	4,340	5·35	5,940
13	2·15	1,030	5·05	5,160	5·65	6,790
14	2·45	1,270	5·15	5,410	6·36	9,100
15	3·05	1,840	6·1	8,200	7·0	11,600
16	3·25	2,060	6·3	8,890	7·2	12,500
17	3·30	2,110	6·4	9,240	7·35	13,100
18	3·40	2,220	6·3	8,890	7·55	14,000
19	3·4	2,220	6·0	7,870	7·6	14,300
20	3·45	2,280	5·9	7,550	7·55	14,000
21	3·6	2,460	5·9	7,550	7·15	12,200
22	3·6	2,460	5·8	7,240	6·25	8,720
23	3·5	2,340	5·7	6,940	5·5	6,350
24	3·5	2,340	5·7	6,940	5·1	5,290
25	3·5	2,340	5·5	6,350	5·1	5,290
26	3·4	2,220	5·4	6,070	5·6	6,640
27	3·4	2,220	5·4	6,070	6·0	7,870
28	3·3	2,110	5·2	5,540	6·25	8,720
29	3·2	2,000	5·2	5,540	6·05	8,040
30	3·1	1,890	5·0	5,030	5·8	7,240
31			5·6	6,640		....

DAILY GAUGE HEIGHT AND DISCHARGE of St. Mary's River near Wycliffe, for 1914.

Day	July		August		September		October		November		December	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5·82	7,400	2·8	1,590	1·8	767	1·5	590	2·0	910	2·0	910
2	6·22	8,610	2·8	1,590	1·8	767	1·5	590	2·0	910	2·0	910
3	6·65	10,200	2·7	1,500	1·8	767	1·5	590	2·0	910	2·0	
4	7·0	11,600	2·6	1,400	1·8	767	1·5	590	2·0	910	2·0	
5	7·0	11,600	2·6	1,400	1·8	767	1·5	590	2·0	910	2·1	
6	6·7	10,400	2·5	1,310	1·8	767	1·5	590	2·0	910	2·1	
7	6·3	8,800	2·5	1,310	1·8	767	1·5	590	2·0	910	2·2	
8	5·9	7,550	2·4	1,230	1·8	767	1·5	590	2·0	910	2·2	
9	5·6	6,640	2·4	1,230	1·8	767	1·5	590	2·0	910	2·2	
10	5·5	6,250	2·3	1,150	1·8	767	1·6	644	2·0	910	2·2	
11	5·15	5,910	2·2	1,070	1·8	767	1·6	644	2·0	910	2·2	
12	5·4	6,075	2·2	1,070	1·8	767	1·6	644	2·0	910	2·2	
13	5·5	6,250	2·1	990	1·8	767	1·6	644	2·0	910	2·2	
14	5·5	6,250	2·1	990	1·8	767	1·7	703	2·0	910	2·2	
15	5·4	6,075	2·1	990	1·8	767	1·7	703	2·0	910	2·2	
16	5·0	5,030	2·1	990	1·8	767	1·7	703	2·0	910	2·2	
17	4·7	4,440	2·1	990	1·8	767	1·8	767	2·0	910	2·2	
18	4·5	3,910	2·0	910	1·8	767	1·8	767	2·0	910	2·2	
19	4·25	3,440	2·0	910	1·8	767	1·8	767	2·0	910	2·2	
20	3·95	2,940	2·0	910	1·8	767	1·8	767	2·0	910	2·2	
21	3·75	2,660	2·0	910	1·8	767	1·8	767	2·0	910	2·2	
22	3·55	2,400	2·0	910	1·8	767	1·8	767	2·0	910	2·2	
23	3·4	2,220	1·9	836	1·8	767	1·8	767	2·0	910	2·2	
24	3·25	2,060	1·9	836	1·8	767	1·9	836	2·0	910	2·2	
25	3·2	2,000	1·9	836	1·8	767	1·9	836	2·0	910	2·2	
26	3·1	1,890	1·9	836	1·8	767	1·9	836	2·0	910	2·2	
27	3·1	1,840	1·8	767	1·8	767	1·9	836	2·0	910	2·2	
28	3·0	1,780	1·8	767	1·8	767	1·9	836	2·0	910	2·2	
29	[illegible]	[illegible]	1·8	767	1·8	767	1·9	836	2·0	910	2·2	...
30	2·9	1,680	1·8	767	1·8	767	1·9	836	2·0	910	2·2	...
31	2·8	1,590	1·8	767	1·0		1·9	836			2·2	...

MONTHLY DISCHARGE of St. Marys River near Wycliffe for 1914.

Drainage area, 1,100 square miles.

Month.	Discharge in Second Feet			Run-Off.			Accuracy.
	Maximum	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
April	2,460	395	1,470	1·34	1·50	87,500	B
May	9,240	2,220	5,530	5·05	5·82	340,000	B
June	17,100	7,340	9,550	8·68	9·68	568,000	B
July	11,600	1,590	5,430	4·93	5·68	333,000	B
August	1,590	767	1,050	0·95	1·10	64,600	B
September	767	767	767	0·70	0·78	45,600	D
October	836	590	711	0·65	0·75	43,700	D
November	910	910	910	0·83	0·93	54,100	....

MISCELLANEOUS METERING STATIONS.

Date		Stream	Locality	Gauge Height	Discharge.
				Feet	Sec ft
	1913				
Sept 30		Washout Creek	Galena	0·72	12·9
	1914				
May 26		Washout Creek	Galena	1·50	45·0
June 24				1·65	55·8
Aug 24			"	1·02	13·4
Oct 7			"	1·10	12·2
April 17		Shuswap Creek	Athalmer	0·50	11·09
May 23				1·30	48·02
July 28		"		1·15	20·90
Aug 25			"	1·00	16·70
Sept 24			"	1·00	17·15
" 28				1·00	15·25
May 27		Lewis Creek	Wasa	0·55	17·5
July 6				0·65	17·5
Aug 12					7·68
Sept 26				0·40	4·92
May 15		Little Bull	Bull River	1·05	7·83
Aug 4		"	"	1·30	14·3
Sept 9			"	1·26	12·9
July 7		Moyie River	Kingsgate	2·1	1,140·
Aug 1		"	"	0·80	333·0
Oct 15		"		1·10	183·0
" 15				0·80	225·0
" 8		"	"	0·75	213·0
Aug 14		Sheep Creek	Wasa	11·25	91·8
Sept 28				11·00	97·0
Aug 25		Skookumchuck Creek			114

Date.	Stream	Tributary to	Locality	Gauge Height	Discharge
				Feet	Sec ft
Nov 27	Duncan River	Howser	Howser	1·80	1,250
" 29	Fry Creek		Kaslo	2·1	278
" 27	Glacier Creek		Howser	4·3	142
" 10	Kootenay River		Taghum		27,300
Dec 8					23,400
Nov 28	Lardeau River		Howser		1,130
April 18	Wilson Creek		Roseberry	1·85	822
May 14	"		"	3·48	2,290
June 15	"		"	3·80	3,320
" 18			"	4·00	2,480
July 8	"		"	2·50	2,340
Aug 17	"		"	0·85	642
Nov 3	"		"	0·90	759

Date.	Stream	Locality	Gauge Height	Discharge
			Feet	Sec-ft
1914				
May 7	Columbia River	Near Athalmer	1·65	225
" 17		"	1·43	233
Oct 24	Field Creek	Near Field		2·92
June 15	[illegible] Creek	Golden		62·8
July 28	Hospital Creek	"	3·82	17·4
June 12	"	"	5·20	66·1
July 27	"	"	4·75	6·69
Nov 20	Salmon River	Beaton	1·8	57·0

INDEX.

PAGE

[illegible] and Reliability of Data, Hydrographic data 13
[illegible] ver, Hydrographic data 270
[illegible] on River 194
[illegible] river [illegible] ... Hydrographic data 275
[illegible] ets 7
[illegible] am, Hydrographic data 431
[illegible] ake, Hydrographic data 55
[illegible] ake, Hydrographic data 58
[illegible] raphic data 117
[illegible] ta. 204
[illegible] data 62
[illegible] graphic data 64
[illegible] Creek, Hydrographic data 66
[illegible] data 168
[illegible] ic data 327
[illegible] phic data 61
[illegible] ic data 207
[illegible] Hydrographic data 130
[illegible] aphic data 278
38
[illegible] -mile Creek, Hydrographic data 434
[illegible] Moberly, Hydrographic data 437
[illegible] Creek, Hydrographic data 440
[illegible] r, near Mou[illegible], Hydrographic data 494
[illegible] Creek [illegible] ffray 523
Co-operation and Acknowledgements 14
Convenient Equivalents 12
Chief Engineer's Report—Coast Division 3
Coast Division—
  Territory 17
  Uses of Water 17
  Present Water-Power Developments 17
  Possible Water-Power Developments 17
  Municipal supply 17
  Reclamation 17
  Irrigation 18
  Location of Stations 18
  Precipitation and Temperature 18
  Comparison of Stream Measurements 18
Districts—
  Southern 4, 5, 19
  Lillooet 5, 20, 24
  Vancouver Island 5
  Regular Metering Stations 4, 5, 21, 24
  Miscellaneous Metering Stations 204
Campbell River, Hydrographic data 120
Capilano Creek, Hydrographic data 69
Cayuse Creek, Hydrographic data 171
Cheakamus River, Hydrographic data 174
Chehalis River, Hydrographic data 72
Chilliwack River, Hydrographic data 75
Chemainus River, Hydrographic data 123
Coquihalla River, Hydrographic [illegible] 78
Cowichan River, Hydrographic d[illegible] 126
Coquitlam River, Hydrographic [illegible] 24
Campbell Creek, Hydrographic da[illegible] 210
Canyon Creek, Hydrographic data 213, 442
Celeste Creek, Hydrographic data 281
Little Clearwater River, Hydrographic data 220
Cherry Creek, Hydrographic data 223, 497
Criss Creek, Hydrographic data 333
Coldwater River, Hydrographic data 330
Crazy Creek, Hydrographic data 284
Canyon Creek, Hydrographic data 213
Cariboo Creek, near Burton City, Hydrographic data 367
Carpenter Creek, near New Denver, Hydrographic data 368
Carpenter Creek, south fork near Sandon, Hydrographic data 372
Cherry Creek near Wasa, Hydrographic data 223
Columbia River, near Castlegar, Hydrographic data 373
Columbia River, at Golden, Hydrographic data 335
Columbia River, near Revelstoke, Hydrographic data 377
Columbia River, near Trail, Hydrographic data 446
Columbia River, drainage basin Cranbrook District, Hydrographic data 45
Clearwater River, Hydrographic data........ 216, 217
Climatic Conditions.... 45
Chinook Winds 47
Division of Work........ [illegible]

Districts—Continued.

PAGE.

Definition of Terms 12
Developed Water powers—Coast Division 24
Deadman River, Hydrographic data 339
Districts and Staff—Kamloops Division 35
Developed Water powers—Kamloops Division 38
Duncan River, Hydrographic data 530
Dutch Creek, near Fairmont Springs, Hydrographic data 449
Explanation of Tables 11
Englishman River, Hydrographic data 129
Eagle River, at Malakwa, Hydrographic data 287
Essell Creek, Hydrographic data 226
Elk River, near Elko, Hydrographic data 503
Fountain Creek, Hydrographic data 177
Fraser River, Hydrographic data 81
Fishtrap Creek, Hydrographic data 363
Fraser River, at Lytton, Hydrographic data 342
Fortune or Davis Creek, Hydrographic data 39
Fry Creek, Hydrographic data 530
Field Springs, Nos. 1, 2 and 3, Hydrographic data 450
Findlay Creek, near Canal Flats, Hydrographic data 454
Four-mile Creek, below Hewitt Mill, Hydrographic data 380
Four-mile Creek, above Hewitt intake, Hydrographic data 383
Frasil Ice 51
Green River, at Nairn Falls, Hydrographic data 179
Green River, at Green Lake, Hydrographic data 183
Gilley Creek, Hydrographic data 24
Goldstream River, Hydrographic data 22
Granite Creek, Hydrographic data 290
Guichon Creek, Hydrographic data 229
Glacier Creek, Hydrographic data 46
Goat River, near Erickson, Hydrographic data 388
Gold Creek, near Newgate, Hydrographic data 506
General Remarks—Nelson Division 45
Hixon Creek, above Belknap Creek, Hydrographic data 86
Hixon Creek, near mouth, Hydrographic data 84
Hat Creek, Hydrographic data 344
Heffley Creek (upper) Hydrographic data 232
" (lower) Hydrographic data 235
Horsethief Creek, near Wilmer, Hydrographic data 457
Hospital Creek (Weir) Hydrographic data 458
Hydrographic Districts—Nelson Division 48
Haslam Creek 134
Irrigation Streams—Coast Division 25
Ingram Creek, Hydrographic data 238
Illecillewaet River, near Revelstoke, Hydrographic data 462
" " Glacier, Hydrographic data 460
Incomappleux River, near Beaton, Hydrographic data 466
Irrigation—Kamloops Division 33
Inspections—Kamloops Division 36
Jones Creek, Hydrographic data 88
Jordan River 22
Jamieson Creek, Hydrographic data 241
Kamloops Division:—
  Chief Engineer's Report 3
  Territory 33
  Uses of Water 33
    Irrigation 33
    Water Power Development 33
    " " Possibilities 33
    Municipal Supply 34
  Topography 34
  Precipitation and Climate 34
  District and Staff 35
    Kamloops District 35
    The Ashcroft and Nicola District 36
    The Okanagan District 36
    Kamloops Office 36
  Inspections 36
  Developed Water Powers 38
    Barriere River 38
    Boundary Creek 39
    Crazy Creek [illegible]
    Fortune, or Davis Creek [illegible]
    Kettle River at Cascade
    Kettle River (North Fork)
    Murray Creek [illegible]
    Nakalliston Creek 40
    Similkameen River 40
  Precipitation, Total Monthly 40
    " Difference from average 41
  Temperature, Mean Monthly 40
    " Difference from average 41
Koksilah river, Hydrographic Data 134
Kettle River at Carson, Hydrographic data 301
" (North Fork), Hydrographic data 292
" (West Fork), Hydrographic data 295
" near Nicholson's Bridge, Hydrographic data 298
" at Cascade, Hydrographic data 301
Kaslo creek 389
Kicking Horse River, near Golden 468
" " " " Field 472
" " " " No. 2 Tunnel 474

Kamloops Division—*Concluded.*

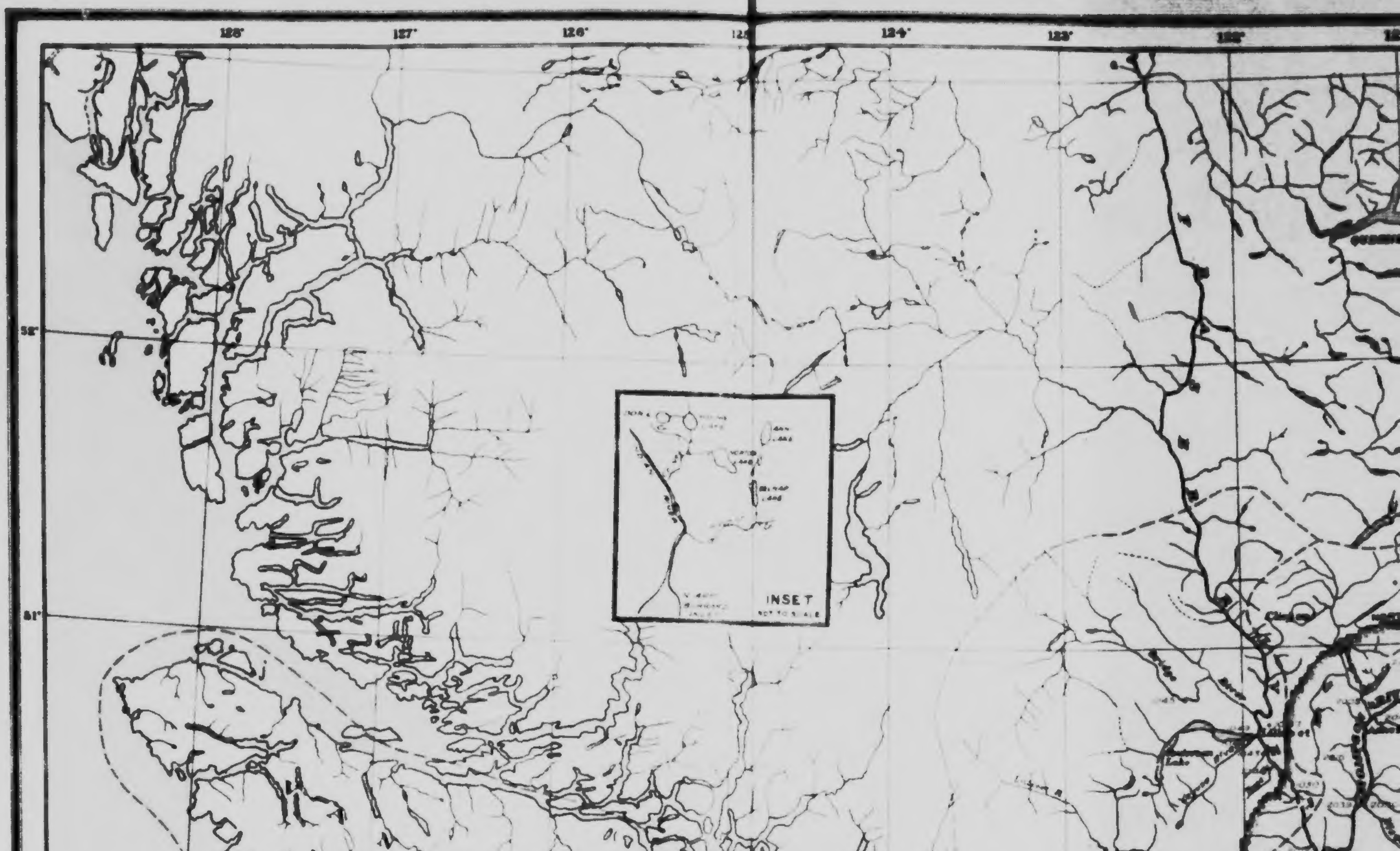
PAGE
Kooskanax Creek, near Nakusp
Kootenay River, at Upper Bonnington Falls 311
" " **near** Bonnington Pool, Hydrographic data 395
" " " Glade, Hydrographic data 411
" " " Nelson, Hydrographic data 417
" " " Wardner, Hydrographic data 412
Laluwissin Creek, Hydrographic data 508
Lillooet River, Hydrographic data 185
Little Qualicum River, Hydrographic data 187
Lynn Creek, Hydrographic data 137
Little Blackwater River, Hydrographic data 91
Location of Stations, Coast Division 194
Louis Creek, Hydrographic data 18
Lardeau Creek, Hydrographic data 244
Linklater Creek, Hydrographic data 530
Little Sand Creek, near Jaffray 512
Little Clearwater River, Hydrographic data 524
Mesliloet River, Hydrographic data 220
" " Tributaries, Hydrographic data 94
McGillivray Creek, Hydrographic data 24
Municipal Water Supply, Coast Division 194
" " " Kamloops Division 17
Murray Creek, Hydrographic data 34
Metering Stations, list of Regular, Coast Division 40
" " " Miscellaneous, Coast Division 4
" " " Regular, Kamloops Division 5
" " " Miscellaneous, Kamloops Division 6
" " " Regular, Nelson Division 8
" " " Miscellaneous, Nelson Division 9
Methods of Measuring Stream Flow 11
Monte Creek (Diversion to Summit Lake), Hydrographic data 13
" (below Diversion to Summit Lake), Hydrographic data 247
" above Bostocks Diversion), Hydrographic data 250
Myrtle River, Hydrographic data 253
Miscellaneous Measurements in Thompson River Drainage, Hydrographic data 256
Moyie Creek, Hydrographic data 363
Mark Creek, near Marysville, Hydrographic data 530
Mud Creek, near Elko, Hydrographic data 513
516

Nelson Division—
Chief Engineer's Report
General Remarks 45
Climate Conditions 45
Chinook Wind 45
Snowfall data 47
Snowfall Table 47
Temperature 48
Co-operation 48
Hydrographic Districts 48
Problem of Transportation 48
Winter Measurements 49
Personal Equation 50
Frazil Ice 50
Meter 51
Total Monthly Precipitation 51
Mean Monthly Temperature 51
Difference from Average Precipitation 52
" " " Temperature 52
Regular Metering Stations, List of 52
Miscellaneous Metering Stations, List of 9, 367
Nanaimo River, Hydrographic data 11, 530
Niskonlith Creek 140
Nicolum River, Hydrographic data 346
Norton Creek, Hydrographic data 97
North Lillooet River, Hydrographic data 99
Nahatlatch River (Upper), Hydrographic data 24
Nahatlatch River (Lower), Hydrographic data 347
Nicola River at Merritt, Hydrographic data 350
Nicola River at Mouth, Hydrographic data 352
Nakalliston Creek, Hydrographic data 355
Nakusp Creek, near Nakusp, Hydrographic data 40
North Thomson River, above Clearwater River, Hydrographic data 419
North Thomson River, above Jameson Creek, Hydrographic data 363
North Vermilion Creek, near Edgewater, Hydrographic date 363
No. 2 Creek, near Forsters Landing, Hydrographic data 488
Oyster River, Hydrographic data 478
Okanagan River, Hydrographic data 143
Okanagan District, Kamloops Division 308
Organisation 7
Personal Equation 4
Precipitation, Difference from Average, Nelson Division 50
" Total Monthly, Nelson Division 52
Problem of Transportation, Nelson Division 51
Precipitation and Temperature, Coast Division 49
" and Climate, Kamloops Division 18
Possible Water Power Developments, Coast Division 34
Present " " " " 24
Puntledge River, Hydrographic data 17
" " Diversion Dam, Hydrographic data 146
Paul Creek, Hydrographic data 149
Power River, Hydrographic data 258
24

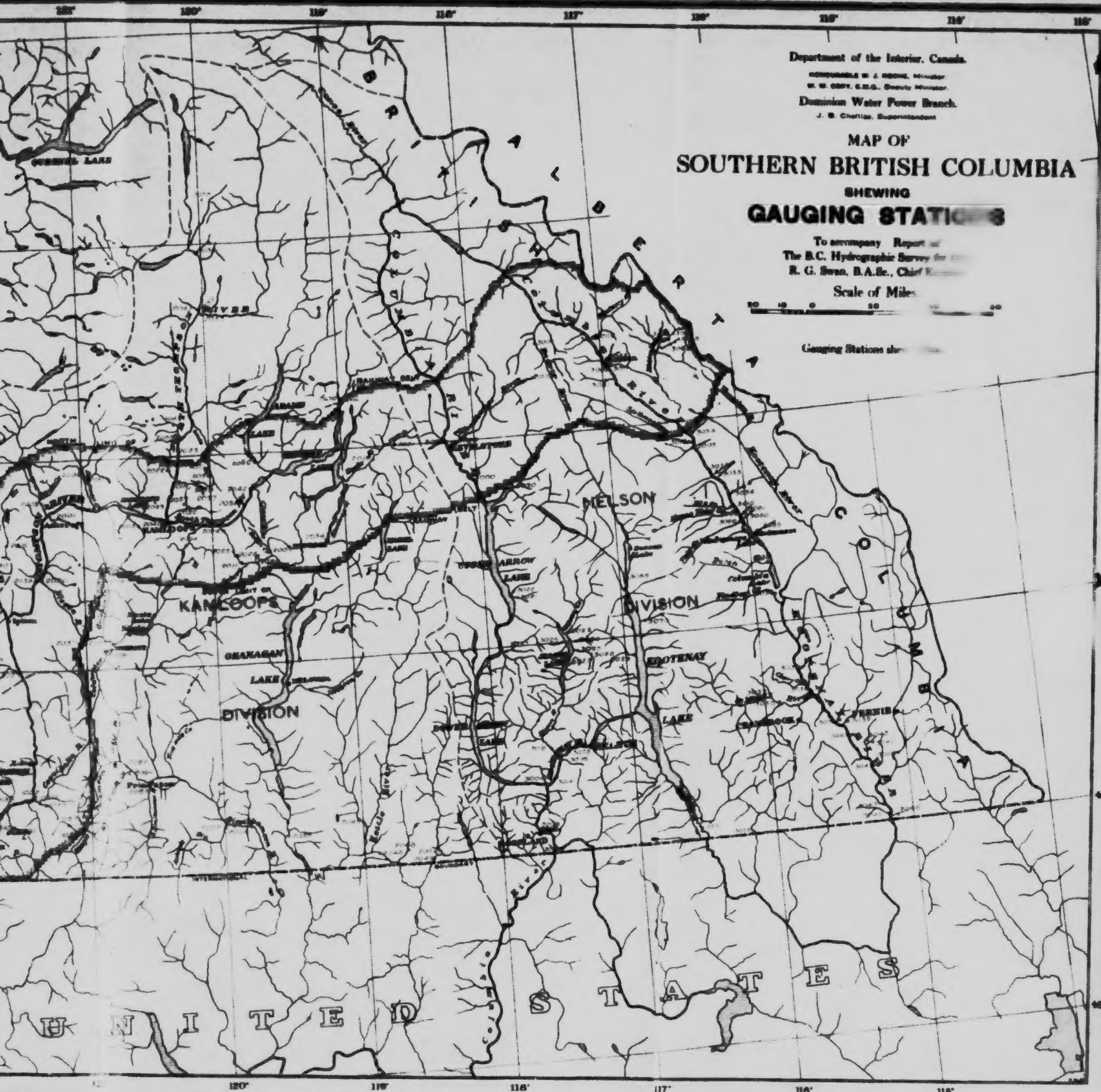
Nelson Division—*Concluded.*

PAGE.

Pend d'Oreille River, Hydrographic data 422
Phillips Creek, near Roosville, Hydrographic data 518
Reclamation and Drainage, Coast Division 26
Rainbow Creek, Hydrographic data 24
Raven Creek, Hydrographic data 24
Riley Creek, Hydrographic data 190
Raft River, Hydrographic data 260
Rock Creek, near Elko, Hydrographic data 521
Roaring Creek 194
Scope of Work 3
Seton Creek, Hydrographic data 192
Seymour Creek, Hydrographic data 102
Shawnigan Creek, Hydrographic data 152
Silver Pitt Creek, Hydrographic data 105
Silver Hope Creek, Hydrographic data 24
Stave River, Hydrographic data 24
Six-mile Creek, Hydrographic data 197
Slollicum Creek, Hydrographic data 108
South Lillooet River, Hydrographic data 108
Skagit River, Hydrographic data 204
Soo River, Hydrographic data 200
Sproat River, Hydrographic data 155
Stamp River at Great Central Lake, Hydrographic data 159
" " at Stamp Falls, Hydrographic data 162
Sumallo River, Hydrographic data 111, 114
Similkameen River, Hydrographic data 311
South Similkameen River, Hydrographic data 316
Shuswap River, at Enderly, Hydrographic data 314
Siwash Creek, Hydrographic data 263
Spius Creek, Hydrographic data 358
Shuswap River, Hydrographic data 314
Salmon River, Hydrographic data 530
St. Mary's River, near Wycliffe, Hydrographic data 526
Sawmill Creek, near New Denver, Hydrographic data 425
Sinclair Creek, near Sinclair, Hydrographic data 481
Slocan River, near Cresent Valley, Hydrographic data 427
Spillimacheen River, near Spillimacheen, Hydrographic data 482
Southern District, Coast Divison, Hydrographic data 19
Snowfall data, Nelson Division 47
Snowfall Table, Nelson Division 48
South Vermilion Creek, near Edgewater Hydrographic data 490
Territory, Coast Division 17
" Kamloops Division 33
" Nelson Division 45
Temperature, Nelson Division 48
" Mean Monthly 52
" Difference from average 52
Topography, Kamloops Division 34
Total Monthly Precipitation, Kamloops Division 40
Texas Creek, Hydrographic data 201
Tsolum River, Hydrographic data 165
Trout Creek, Hydrographic data 204
Tranquille River 267
Tulameen River, Hydrographic data 320
Thompson River at Chase, B. C., Hydrographic data 324
" " Kamloops, Hydrographic data 264
" " Spences Bridge, Hydrographic data 361
Toby Creek, near Athalmer, Hydrographic data 486
Uses of Water, Coast Division 17
Uses of Water, Kamloops Division 33
Vancouver Island District, Coast Division 28
Water Powers Developed, Coast Division 24
" " Development, Possible, Coast Division 17
" " Southern District 26
" " Lillooet District 20
" " Vancouver Island District 21
Water Power Development, Kamloops Division 33
" " Possibilities, Kamloops Division 33
Windermere Creek, Hydrographic data 492
Whitewood Creek, Hydrographic data 363
Wilson Creek, Hydrographic data 530
Washout Creek, Hydrographic data 530
Winter Measurements, Nelson Division, Hydrographic data 50
Young Creek, Hydrographic data 115



Drawn in the Office of the Chief Draughtsman, Dominion Water Power Branch.



Department of the Interior, Canada.
HONOURABLE W. J. ROCHE, Minister
W. W. CORY, C.M.G., Deputy Minister.
Dominion Water Power Branch.
J. B. Challies, Superintendent

MAP OF
SOUTHERN BRITISH COLUMBIA
SHEWING
GAUGING STATI[illegible]S

To accompany Report of
The B.C. Hydrographic Survey for [illegible]
R. G. Swan, B.A.Sc., Chief [illegible]

Scale of Miles

Gauging Stations sh[illegible]